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TRUCK design and truck operating methods yearly undergo changes that result in the elevation of the truck and highway transportation to a constantly higher plane of operating efficiency and industrial and social indispensability. Articles on pages following furnish an authoritative insight into developments in the great field of truck transportation.

DESIGN TRENDS



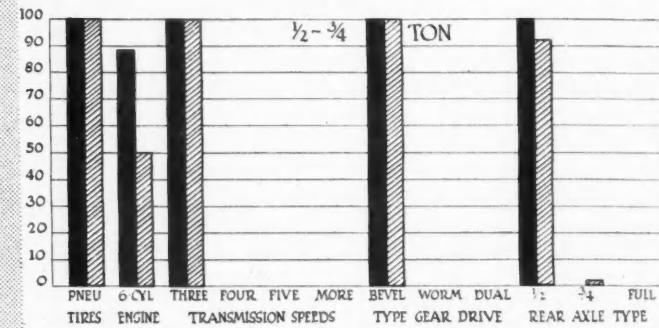
THE trend of design of new truck models announced during 1928 reflects the interest in performance which exists among users and sellers of motor trucks. New models incorporated such features as pneumatic tires, six-cylinder engines, transmissions with more speeds than before and brakes capable of quicker stops to an even greater degree than the average of all models listed in COMMERCIAL CAR JOURNAL AND OPERATION & MAINTENANCE specifications tables at the close of 1927.

Higher road speed, better flexibility and faster stops are characteristics of the new models. More power, more cylinders and higher geared axles give greater speed on good roads, while a greater range of transmission ratios provides for negotiating varying surfaces. Improvement of brake design and construction, four-wheel brakes and power supplementary to the driver's effort have aided in reducing the stopping distance of modern trucks. Engine power has been

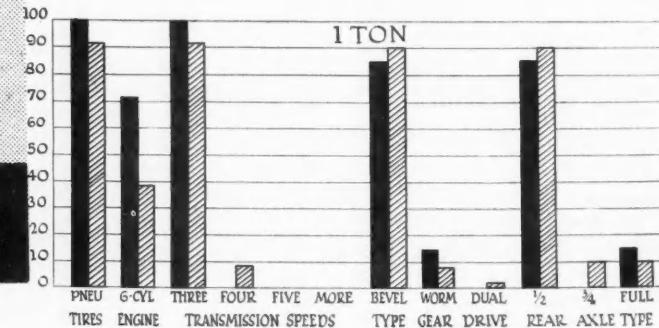
Pneumatic Tires and Six-Large Gains; Number of increased; Stopping

stepped by increasing piston displacement and by getting more power per cubic inch.

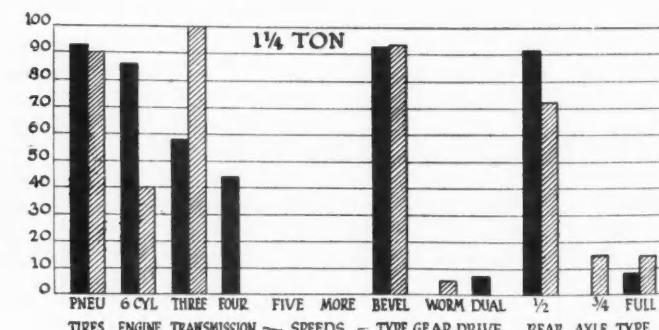
Pneumatic tires are available on trucks of all ratings from $\frac{1}{2}$ ton to more than 5 tons. All new models up to



All new models have pneumatic tires, three-speed transmissions and bevel gear, semi-floating rear axles. Six-cylinder engines gained. Rear axle gearing slower, new model average being 4.78, compared with 4.48 for all models listed at end of 1927.



Worm drive and sixes show increase. Three-speed transmissions and pneumatic tires on all new models. Axle gearing average 5.03 to 1 for new, 5.49 to 1 for all models listed at the end of 1927.

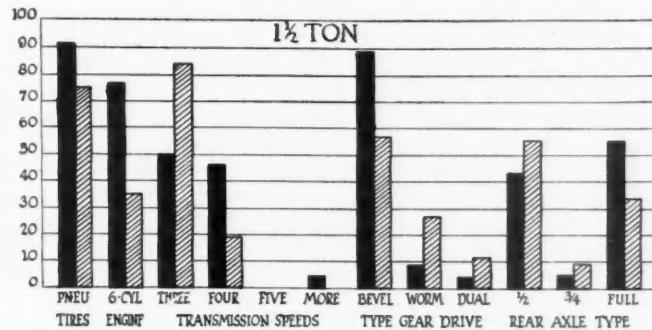


Percentage of six-cylinder engines more than doubled. Four-speed transmissions appear in numbers. Average rear axle reduction 5.50 to 1 for new models, and 5.49 to 1 for all models listed at the end of 1927.

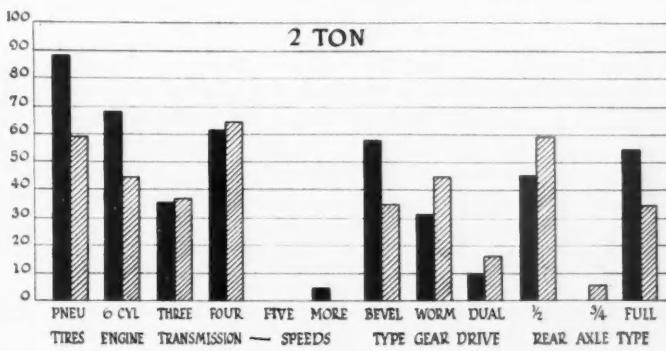
IN NEW TRUCKS

Cylinder Engines Show Transmission Speeds In-Ability Improved

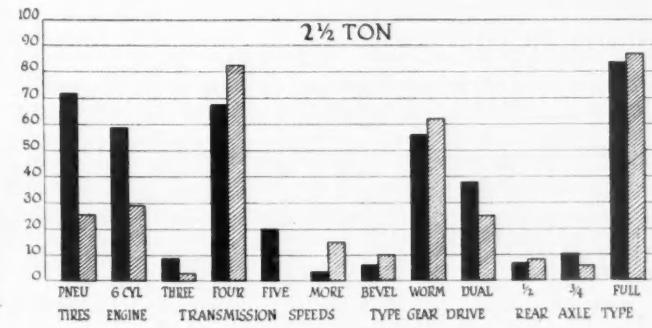
and including 1 ton are on pneumatics and more than half the new models in the 1½, 2, 2½, 3 and 5-ton classes have this type of tire. Solid tires are ahead in the new 3½ and 4-ton groups and for chassis rated at more than 5 tons.



Pneumatic tires, six-cylinder engines, four-speed transmissions, bevel gear drive and full-floating axles show gains. Transmissions of more than five speeds appear. Rear axle gearing faster, 5.82 for new models, as against 6.34 to 1 for old



New models announced in 1928 show increases in pneumatics, six-cylinder engines and bevel drive. Average axle ratios are 6.15 to 1 for new models and 7.00 to 1 for all models listed at end of 1927



Five speeds are used in one-fifth of new models; pneumatics and sixes predominate. New model rear axle reduction averages 7.27 to 1 against 8.04 for all models listed at the end of 1927

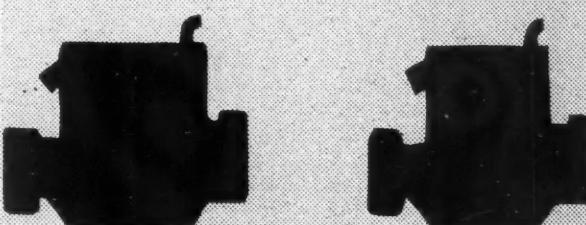
Legend

■ Percentages based upon new models announced in 1928

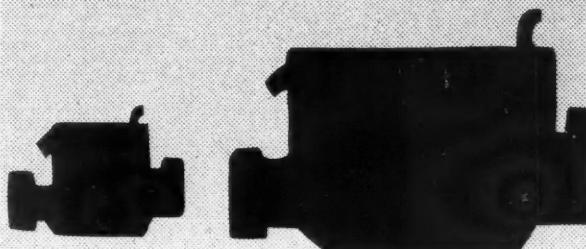
■ Percentages based upon all models listed Dec., 1927

All comparisons are between new models announced during 1928 and all models listed in Dec., 1927

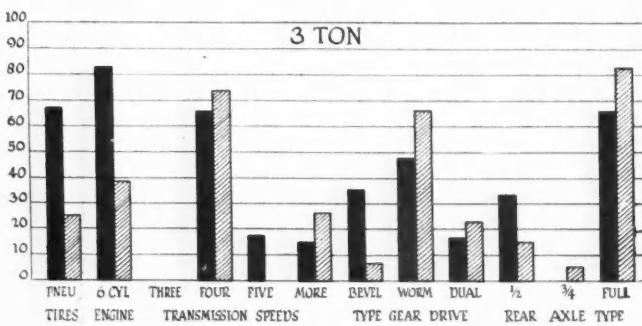
By
James W.
Cottrell



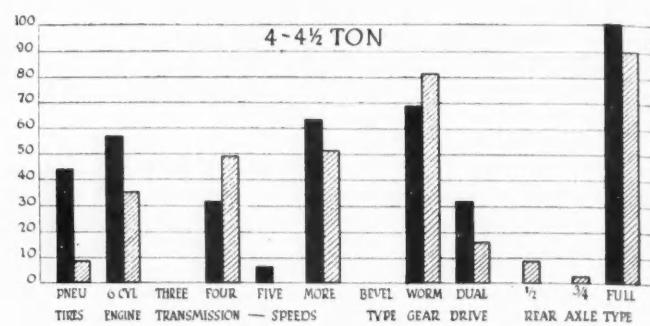
Four-cylinder engines had a slight lead over sixes at the end of 1928, there being 413 fours and 375 sixes listed in COMMERCIAL CAR JOURNAL AND OPERATION & MAINTENANCE specifications tables



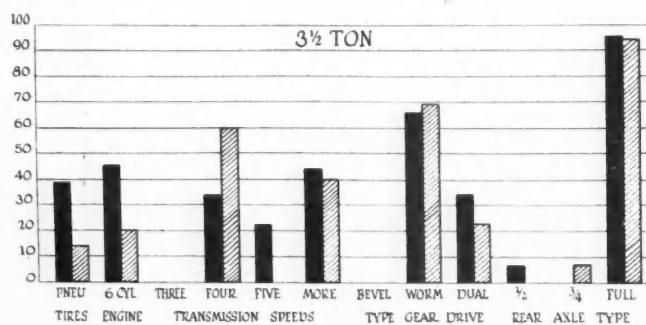
Of the new models announced during the year 1928, the number of sixes was two and one-half times the fours



Bevel gear drive gained in favor. Note large increase in pneumatic tires and six-cylinder engines. Ratio of rear axles 7.4 to 1 on new models and 8.25 to 1 on old



Transmissions with more than five speeds and six-cylinder engines predominate in new models. Axle ratios are practically unchanged, the average being 9.00 to 1



Percentage of new models with pneumatics is three times, and with six-cylinder engines more than two times all models listed at end of 1927. Transmissions with five or more speeds gained. Ratio of rear axles 8.13 to 1 for new models and 8.95 to 1 for all at end of 1927

Six-cylinder engines are embodied in two-thirds of the new models from $\frac{1}{2}$ to 3 tons and in the 5-ton group; in half of those of more than 5 tons, in 45 per cent of the 3 1/2-ton new models and 57 per cent of the 4-ton group.

A new rating of 1 1/4 tons appearing this year had no counterpart in 1927 and no comparisons are made in this group.

Number of transmission speeds continues to increase. Three speeds are universal in new models ranging from $\frac{1}{2}$ to 1 ton and lead all other types up to and including 1 1/2 tons. Four speeds are ahead in the 2, 2 1/2 and 3-ton groups. No three-speed units are used in new models of more than 3-ton capacity. Transmissions of more than five speeds are ahead in the 3 1/2 ton classification and are embodied in more than half the new chassis from 4 tons upward. The five-speed transmission appears in the 2 1/2-ton group and is incorporated in 19 per cent of the new models of this tonnage and more.

Chassis specifications supplied by manufacturers are not complete in reference to brakes. Figures based upon information available are not conclusive because they might be offset, to a certain extent, by

models of which details have not been given. Seventy per cent of all models listed at the close of 1928 had two-wheel brakes but more than one-half the new models presented during last year, regarding which information is available, had four-wheel brake equipment. Data concerning method of operation of brakes are given with the same reservation as that of two and four-wheel design. Of those models listed at the end of 1928, of which details were given, 87 per cent had mechanical operation of brakes while of the new models announced with complete data during 1928 61 per cent had hydraulic brakes. Vacuum equipment is employed on 6.8 per cent of all models listed at the end of 1928.

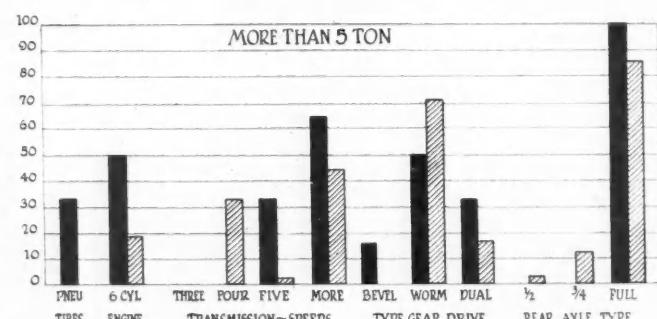
Improvement of secondary brakes, variously referred to as emergency, parking or hand brakes, has been effected along with that of foot brakes. Higher road speeds have been accept-

ed, in part at least, because trucks can be stopped in a shorter distance than formerly was the case. These higher speeds impose an additional burden on the hand brake when it is called upon to make a quick stop in case of failure of the foot brake.

A comparatively small driveshaft brake suffices for a quick stop on a level road but for descending a long hill safely larger surfaces are an advantage. A ventilated disk type of driveshaft brake recently introduced has been adopted by a number of makers.

Better appearance is the characteristic of new model trucks which is first apparent on inspection. The subject does not lend itself to analysis as personal choice is an element of uncertainty. However, there is ample evidence that designers have given much thought to the question.

A few interesting developments, of many which appeared last year, may be recalled at this time, among them the hypoid type of rear axle gear introduced by Mack, the eight-cylinder engine appearing in World trucks, vacuum boosters with hydraulic brakes used on the Model W Yellow coach and adopted for 1929 by several makers, and additional six-wheel trucks.



There were no pneumatics in this group previously. More transmission speeds are provided. Ratios of rear axles: 9.13 to 1 for new models, and 9.73 to 1 for all models listed at the end of 1927

BURNS FUEL OIL LIKE GASOLINE

Truck Makers Are Experimenting With Device Being Used by Philadelphia Rapid Transit Co.

A SUBSTANTIAL saving in the cost of operation of trucks and buses obviously would result from the substitution of a cheaper fuel, such as fuel oil, for gasoline. However, successfully operating a gasoline engine on fuel oil without complicated mechanism is a formidable problem. The recent announcement by J. A. Queeney, vice-president in charge of operation, Mitten Management, Inc., Philadelphia, that a carbureting system for fuel oil, in which gasoline is not used even for starting, has been developed and is in operation, therefore is of unusual interest to truck users and sellers.

Twenty Philadelphia Rapid Transit gas-electric buses are now being successfully operated with fuel oil in Philadelphia, according to Mr. Queeney, and he predicts that the entire fleet of 580 buses in all probability will be running on this fuel before the end of this year. Several truck makers are

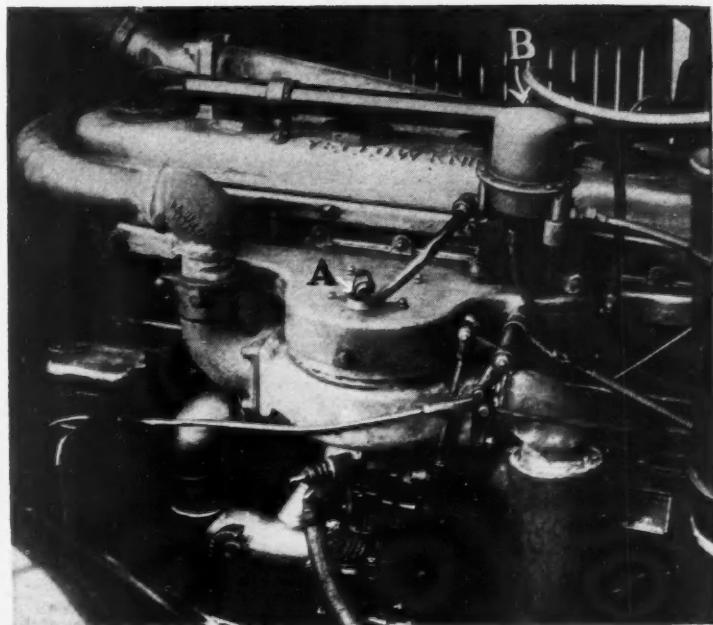


Fig. 1. Fuel oil burning equipment on P.R.T. gas-electric bus. The Godward gas generator and special intake manifold are mounted above a standard carburetor. Exhaust is carried around the front of the engine and through a jacket in the gas generator. The electric vaporizing ring for starting on fuel oil is just above the carburetor. The assembly B and pipe A are for control of lubrication and have nothing to do with carburetion

testing this fuel oil burning equipment and the problem of burning fuel oil in trucks is less difficult than in buses, according to the Godward

Gas Generator, Inc., New York City, designer of the original

equipment from which the P.R.T. installation was developed. Engineers of the two companies spent two years in experiment and trial before the equipment was put into regular service on P.R.T. buses.

Tests made by the P.R.T. show that fuel economy is 5½ per cent better with fuel oil than with gasoline with the same carburetor. The purpose of the generator is to change the mixture coming from the carburetor into a dry gas. This is accomplished by reducing velocity of the gas by means of larger passages and provision for warming the gas on heated surfaces within the generator. (See Fig. 2.) A range of temperature is maintained on the plate surface due to the fact that the aluminum pot is hottest at the bottom and the plates in contact therewith are at a high temperature at the bottom and much cooler at the top. The mixture is given a swirling action by the shape of the plates and is thrown outward toward the inner surface of the pot. Particles of fuel which are not converted into gas at once are deposited on the plates and work downward until they reach a point hot enough to evaporate them.

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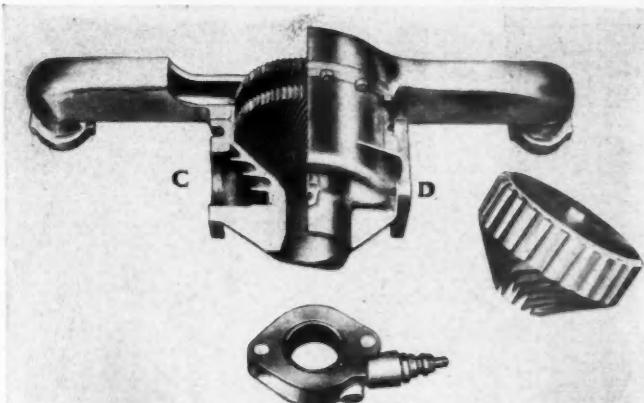


Fig. 2. Interior of the Godward gas generator. Exhaust enters at C and leaves at D. The nest of curved plates does not move but it imparts a circular motion to the gas. A passenger car type nest is shown in the generator, a bus type nest being shown at right. The electrically heated vaporizing ring which is used for heating fuel oil for starting is shown below

By
G. Lloyd
Wilson

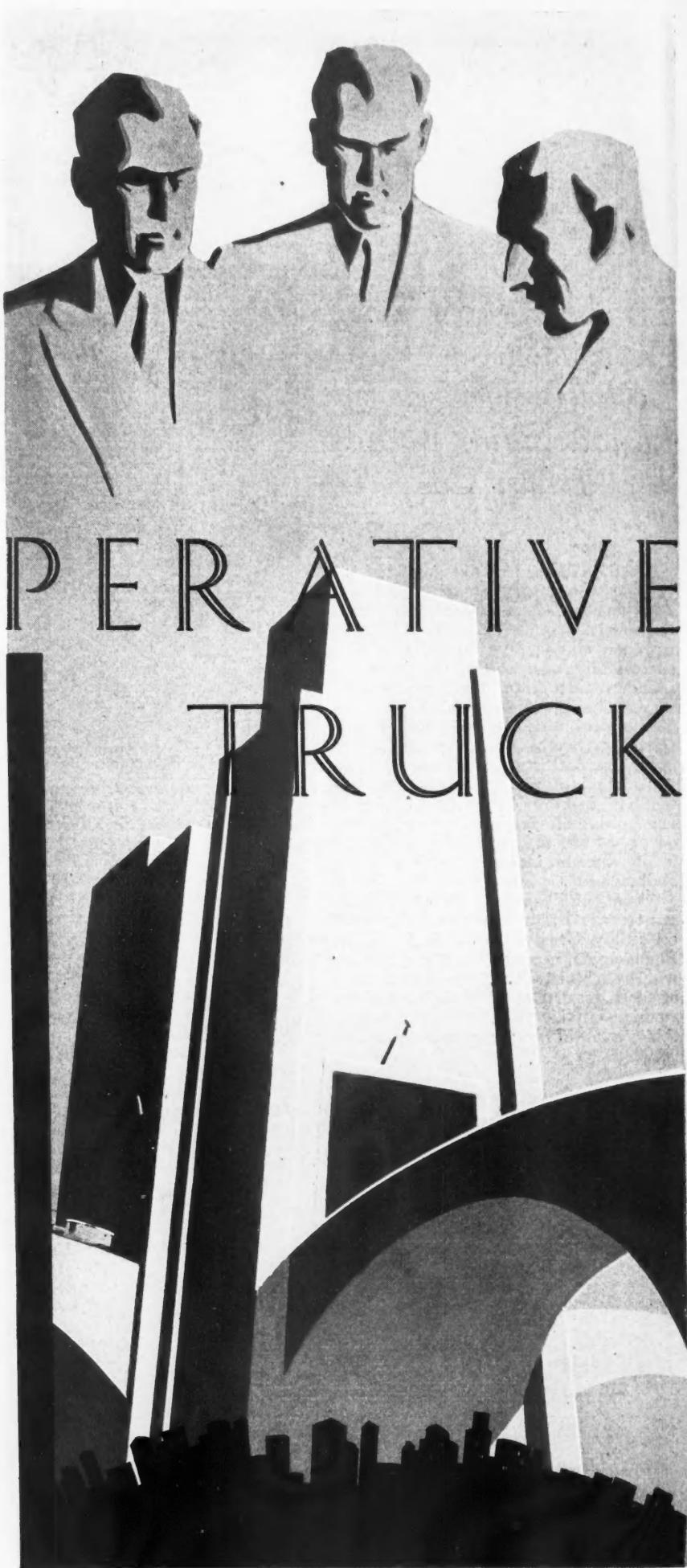
*Professor of Commerce
and Transportation,
University of Pennsylvania*

THE COOPERATIVE TRUCK

AMERICAN business is passing through a change in which the motor truck is playing a role of outstanding prominence. Mass production methods with the attendant standardization of product, continuous production and large unit volume of sales, are being affected by a newer system of synchronized production and distribution in which the production of goods is based upon analysis of the potential markets, rather than the marketing of the goods considered as an afterthought to production. Mass production emphasized the volume of production and attempted to develop a volume of sales to balance production, while distribution production emphasizes the absorbing powers of actual and potential markets and adjusts quantity and quality of product to meet the actual or potential ability of the markets to absorb the products. The phenomenal Age of Production is merging into what many students of industry believe will be an even greater Age of Distribution.

Speed in transportation was a desirable but not an absolutely essential vital element of the mass production system. Goods were produced and shipped in relatively large units, often passing in large units through the hands of several middlemen between the factories and the retailer. Low-cost transportation rather than rapid transportation was the condition assiduously sought for. The retail dealer and the consumer were seen by the producer through several glasses of intermediaries darkly, but not face to face.

Not so today. Manufacturers of products of all kinds are seeking to increase the loyalty of retailers and consumers through direct sales and direct





The Central Union Truck Terminal at Indianapolis, the cooperative effort of Indiana operators

TERMINAL

Its Development, Its Benefits, Its Operation and Its Future

advertising. Never has the American buyer been so courted as he is today. Goods are turned over rapidly in relatively small lots, and the demand for rapid transportation of goods has become the outstanding problem of distribution. Rapid production, high pressure distribution, hand-to-mouth buying and rapid transportation are inseparable elements in modern business. The gatling gun system of distribution is replacing the siege gun method.

The motor truck has assisted in this transition of business, and will assist to a very much greater degree in the next stirring period of business activity, by making it possible for manufacturers and wholesalers to distribute goods to every city, village and farm in the United States rapidly and cheaply.

The intensive courting of consumers for their favor by manufacturers and national distributors of various products from automobiles to zippers has altered the channels of merchandising and transportation. Modern retail

HERE is the first of a series of articles on an important development in the scheme of truck transportation—truck terminals jointly operated by truckmen.

The reasons for this development and its benefits, the full details of the method of operation, and the likely part the union truck terminal idea will play in the future expansion of freight highway transportation have never before been published.

COMMERCIAL CAR JOURNAL AND OPERATION & MAINTENANCE has entrusted this task to G. Lloyd Wilson, professor of commerce and transportation, University of Pennsylvania; author of books on "Motor Traffic Management" and "Industrial Traffic Management," and co-author of "Principles of Transportation." His articles will tell the whole authoritative story of union truck terminals.

Those who are in any wise concerned in the great business of freight highway transportation will do well not to miss a single article in the series.

merchants and shops have replaced the old stores and storekeepers. Bright, clean and convenient shops with increased variety are demanded by a more discriminating group of buyers who have been lured into the shops by the advertisers. Merchants must increase the variety and attractiveness of the stocks of goods by reducing the stock of each line carried, because expansion is impossible in some cases and undesirable in others because of high realty prices. Small stocks, great variety and heavy consumption require frequent replacements to keep the retailers' shelves properly stocked with the varieties of goods demanded by their customers. Independent retailers vie with the chain stores and both contend with the mail order houses for the patronage of the discriminating buying public. The motor truck has formed the connecting link in the chain of distribution completing the services of the railroads and steamship lines in distributing goods in carload lots to distributing centers by railroad or steamship, and from the distributing centers to the shelves of the retail merchants and consumers by motor truck.

The changed plan of distribution has intensified the rivalry of the distributing centers for the trade territory adjacent to them. Wholesalers in various centers compete with those in other cities for the trade of districts accessi-

ble to several distributing centers. The ability to compete successfully for this trade depends upon the quality and price of the goods offered by the competing wholesalers or jobbers, the willingness to fill small orders, the reliability of the concerns and the transportation service and freight rates available by railroad, steamship or motor truck. The fact that the quality and price of the goods is standardized in large measure by national quality and price policies of the manufacturers makes the considerations of service and transportation speed and rates especially important.

Bert O'Leary, an officer of a large middle western drug manufacturing and distribution concern, states:

"It is not overstating the facts to say that during the past 10 years a revolution has taken place in the retail field, and that this revolution has been intensified from year to year, intensified no doubt, by new methods in mass production, but intensified to a greater degree by improved methods of transportation and distribution.

"The time is not long past when, as manufacturers and wholesalers of drugs and kindred lines, we were considerably opposed to breaking our established containers of one or two-dozen lots, but the prevailing order of today is for half-dozens, quarter-dozens and sixth-dozens."

The wholesale distributing merchants in trade centers competing for trade of surrounding territories must strive to give the quickest and cheapest transportation service in order to hold trade. Those offering the best, quickest and cheapest distribution will hold their advantage until improved means of transportation or changes in transportation changes give other centers the advantage. The motor truck is an ideal weapon in the battle for trade territories, enabling distributing centers to gain and hold advantages in trade territory through reductions in the cost of handling goods in small quantities at high rates of speed.

Perhaps no better illustration of the contest of distributing centers for trading area is to be found in the United States than the struggle for the trade of the smaller cities and towns of Indiana. Wholesalers and manufacturers of Indianapolis compete with those located in the great distributing cities of Cleveland, Detroit, Chicago, St. Louis, Cincinnati and other centers along the boundaries of this trade area. Each of these cities is seeking to push its trading frontiers further into this territory while Indianapolis strives to push its own boundaries further from Indianapolis, the center of the area. The distributors in the cities along the outside boundaries strive to push their trade frontiers inward into Indiana, while the distributors in Indianapolis must com-

bat this movement by pushing their frontiers northward toward the Great Lakes, westward toward the Mississippi River, southward toward the Ohio River and eastward into Ohio. Commercial strategy of high order is needed to preserve and extend the territories. The infantry, cavalry and artillery of commerce must be deployed by generals and colonels of industry to prevent the capture of territory by the commercial armies of rival centers. Commodities, merchandising services and transportation facilities must be used to greatest advantage.

The motor truck has been of great service in assisting distributors of these rival centers in their struggle for territory within relatively short distances of the centers. The railroads and steamship lines have developed splendid long-haul service at relatively low rates, but the truck has solved the problem of short-haul, high-speed, less-than-carload lot distribution for distributors. The truck is of especial importance to the distributors of Indianapolis in their campaigns to capture trade territory. Indianapolis is located almost in the geographical center of Indiana, and excellent highways connect the city with several hundred smaller cities, towns, villages and hamlets in the tributary trade territory. Goods can be distributed in motor trucks from this distributing center to these consuming markets in a few hours at favorable rates of freight.

In December, 1928, a meeting of Indianapolis shippers was called by the Indianapolis Chamber of Commerce to analyze the transportation and distribution needs and resources of the city as a shipping and industrial center in order to meet the encroaching competition of Chicago, Cleveland, Cincinnati, Toledo, St. Louis and Louisville. The fear was expressed that Indianapolis was losing trade territory to these distributing centers in other states, as well as to lesser centers in Indiana, despite the fact that the commercial and transportation resources of Indianapolis are equal to if not superior to those of other rival distributing centers. Methods of utilizing commercial and transportation resources and ways, means of serving the trade territory better were discussed and plans for further campaigns were laid. It is not surprising that the motor truck was discussed in this conference as a transportation asset to be used in increasing measure in the trade campaign of distributors of this Indiana city.

The advantages of quick service and store-door delivery at rates as low or lower than railroad freight rates offered by motor trucking concerns have made this type of service popular with distributors throughout the United States. These advantages have enabled wholesalers and other distributors to increase the volume of sales and to reach customers more quickly and often more economically.

These obvious advantages are sometimes discounted by the failure of motor freight operators to maintain the promised schedules, by the absence of responsibility of certain operators, for loss, damage or delay, and by unreasonable and unjust discrimination in rates. It goes without saying that the efforts of distributors to build up business in trade territories based upon definite promises of deliveries by fast motor truck service at stated times are nullified if the operators of the motor freight lines fail to maintain their scheduled service. Further than this, the savings in time and expense obtained through the use of motor truck freight service are discounted if the truck carriers fail to assume the proper liability for freight which is lost, destroyed or delayed as a result of the negligence of the carrier. It is decidedly confusing and often financially unprofitable to pay motor truck transportation charges which are not properly adjusted as between persons, places or kinds of traffic.

Regularity of the service, responsibility of the carriers and equitableness of charges are the foundations upon which any transportation service must rest in order to be of constructive benefit shippers, operators and consignees. And yet, how often are these foundations shaky or lacking by virtue of disorganized, "hit-or-miss" motor truck freight transportation service, where the carriers have failed to cooperate to insure stability.

One of the ways in which stability has been brought about has been by the establishment of cooperative truck terminals. These terminals have been organized as depots in which the operations of route carriers are centralized and concentrated. These terminals serve as clearing houses for interchanging freight among the carriers, as storage places for goods requiring warehousing, as central solicitation headquarters, as concentrated billing and record offices, and in general as terminals for motor truck freight lines through which the carriers by united action may improve the reliability and regularity of their services, fix a uniform policy with respect to the assumption of liability, and adjust rates properly. The carriers are enabled through the use of central terminals to extend their fields of service by interchanging

(Turn to page 48, please)

A NEW IDEA IN DELIVERY

By E. J. Bach

Delivery Manager, Kresge Department Store, Newark, N. J.

The Plan

Supervised delivery
Sorting en route
Cash register for C.O.D.'s
A larger crew
A special body
Combining of routes

Effects

Reduces delivery cost
Reduces number of return packages
Reduces customer complaints
Reduces loss in return merchandise

DEPARTMENT store deliveries in densely populated areas are a special problem because a large part of the time of a delivery crew is taken up in sorting at remote stations and *en route*. On routes where there are many apartment houses the mileage per day is quite low and the standing time is high.

To meet this situation I have developed a body for our use which carries a complete delivery unit and which will make deliveries according to a plan based upon long study and experiment. Each truck will take care of two or more existing one-truck routes. Truck and body will be larger than usual for department store delivery and unit crews likewise will comprise more men than customary in this field.

The crew will comprise a driver, an inspector and two or more delivery men, there being one delivery man or helper for each route served on the trip. Unlike others in this field the driver will do nothing but drive the truck. The inspector will be in charge of the truck and his work and the provision made for handling it inside the body are features of the system. Helpers will "run" packages in much the same manner as at present.

Interior arrangements of the body, which will be described in more detail

Below
Right—Interior of model of new delivery body showing steps at rear, loading door, bins and sorting shelves. Inside wood parts are not made to scale

Left—A coat of arms design is the sole decoration in the side panel of the new body

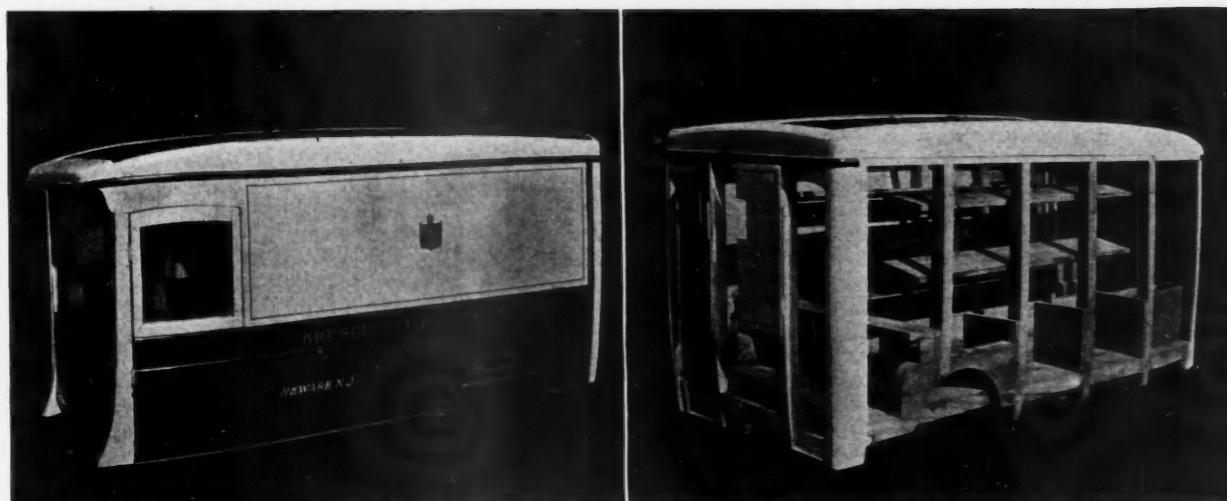


E. J. Bach

later, comprise a center aisle, bins, shelving and counter. The inspector working in the aisle will keep the load sorted as the trip proceeds and at any stop he will hand the packages to the helpers at the counter at the rear of the body. A cash register will be carried in the body and each C.O.D. transaction will be rung up on the machine. The cash register slip will be given to the helper taking the C.O.D. and he must return the package or that amount of money.

The inspector will supervise all "calls, send-again and don't-want" transactions. A large percentage of delivery complaints arise in this group, and this delivery plan is designed to reduce such complaints to a minimum. A "call" is made when a customer wishes to return for credit a package previously delivered.

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THE housewife wants fresh vegetables. Bring them to her door and she will buy at a good profit to the vendor. So good is the profit that fruit and vegetable hucksters in north Kentucky are encountered anywhere. Not only is there room for still more hucksters using trucks but the present operators are always prospects for replacements.

This, in a nutshell, is the observation of one of the most successful truck salesmen in the Greater Cincinnati territory. He is R. L. Ross, assistant sales manager of the Evans Motor Car Co., Covington,

Ky., Chevrolet dealer. Ross specializes in the itinerant vegetable and fruit-selling field. That he has a way of reaching the hucksters all his own is indicated by his sale of 100 trucks in one year in this one field. His success is due to his method, which is at once simple and thorough and may be reduced to four elements:

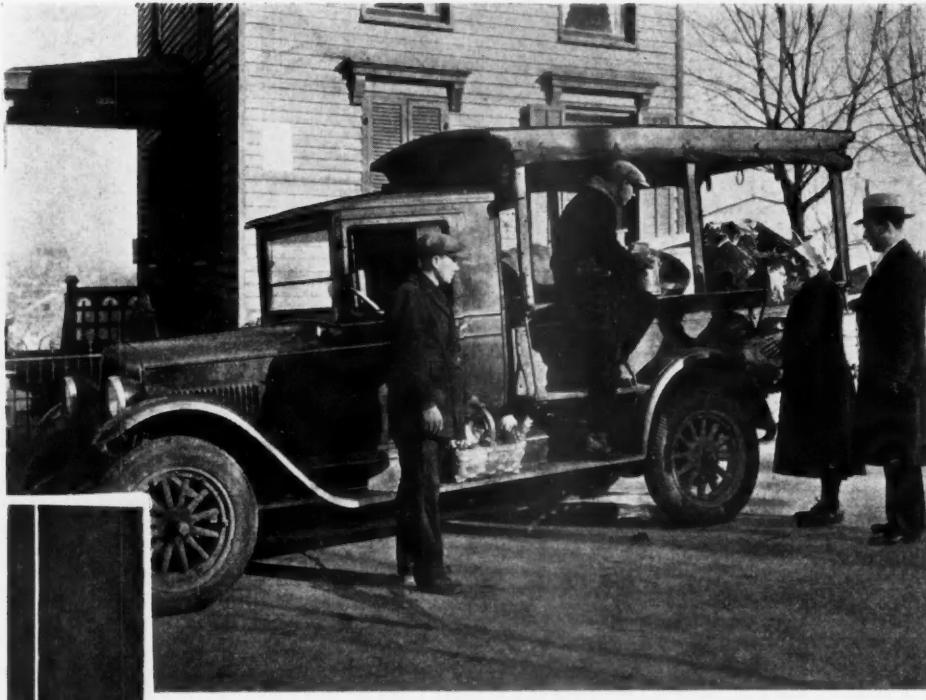
1. Employ every obvious means of acquiring leads.
2. Make an intimate study of every detail of huckstering.
3. Instruct prospects in buying, displaying and selling.
4. Maintain personal contact with sold prospects.

In getting leads Ross is something of an opportunist, availing himself of every little incident or bit of information that may savor of a prospect. He arranges for leads at commission houses, mingles with the hucksters at the produce markets and interviews hucksters en route, always tucking his card under seat cushions

GETS THE HUCKSTER

Vocational Knowledge and Being on the Job at 5 a.m. to Aid Prospects Hawk Their Wares Helps the Salesman to Sell Produce Vendors

By Felix J. Koch



This salesman does more than demonstrate his truck—he helps his prospect sell the customers on the route

when possible. He also employs the more common methods such as advertising in local dailies and securing lists of truck owners for circularizing from the county licensing desk.

Recognizing the necessity of being equipped to offer intelligent suggestions and securing prospect confidence, Ross early in his specialization made it a point to get all information relative to a huckster's operation first hand. He still continues this practice despite his accumulating experience resulting

from constant selling in this field.

Alert through habit, when Ross sees or hears a huckster he promptly stops his car, halts the huckster and makes some minor purchase in order to note how the huckster has stowed his produce. While dickering he makes a systematic survey of the contents of the truck. Starting with the seat he proceeds with the eye down one side and up the other; he notes the bottom and things plainly in view, marks articles placed in baskets or buckets swung below, things stowed on

the roof and carried on the seat, etc. If necessary he questions the man on any matter about which he may not be clear. In this way many ideas are picked up, which later he passes on to his prospects.

Ross also found that these interviews en route, originally occasioned for the purpose of assembling vocational facts, often developed prospects. For example, on almost every vegetable truck there is a helper who may be ready to operate a truck and take on a route of his own. In many cases this helper is a son, nephew, or some kinsman of the owner. If in his opinion the helper appears capable, Ross carefully readjusts his approach to one of selling, suggesting how they might double profits with two trucks, low price advantages of quantity purchases, two trucks in one garage, etc. Ross does not expect that seed to bear fruit at once, but proceeds on the premise that there will come a time when the huckster and his helper will mull it over, or that the helper, when older, will very naturally want to start on his own.

How Ross works with live prospects, what he does and how he closes and follows up after the sale is not only interesting but instructive and can probably be told best by tracing an actual case from beginning to end.

Ross was recently brought into contact with a prospect with whom he first contacted on the street. This particular prospect happened to be a helper, who remembered the suggestions left with him during the interview. He consulted the card Ross had tucked under the seat of the truck and communicated with him. This man, reasoned Ross, while so friendly, knew that there were other makes of trucks besides the one which he represented and that, naturally, he would

investigate the other makes. So first of all he proceeded to convince him by stock arguments familiar to all commercial car salesmen, that the truck he represented was particularly fitted for huckstering. After gaining the man's interest he artfully sprung his big point in the following words:

"I am so sure our truck will be a real money winner that I'll take you out and demonstrate; I'll let you pick the wares and the route, and I'll do the selling, unless you want to help. You'll get the net profit to cover your time. Tomorrow—or next day—or day after? What say?"

The party of the second part could see no real reason for not accepting so fair a challenge as that, so a demonstration was arranged.

Knowing that hucksters like to start on their routes at 6 o'clock in the morning in order to reach homes right after breakfast, and before housewives have put in calls to their grocers, Ross made it a point to be at the home of the prospect at 5 a. m., from which point both rode in the truck to the commission district.

A load of produce for a truck costs about \$65 which, according to prearrangement, the prospect was prepared to pay quite as he would were he already on a route with own truck. In the matter of selection Ross gave the prospect the benefit of his experience as to sort and quality and helped him to place the goods to simplify rearrangements later when on the route for better display effects.

While on the way to the route selected by the prospect Ross again gave his attention to the matter of selling. During the conversation it developed that the prospect's brother, or other relation, was to assist him in financing the truck purchase. Following this lead Ross drew the man out as to just how much money he really had to spend without depreciating the amount that he could put into the business.

Upon reaching the route Ross entirely dismissed all thought of truck selling from his mind and devoted it exclusively to the business of huckstering. He stopped the truck and step by step proceeded to survey the load. He showed how reserve produce, such as bananas, oranges and grapefruit, should be stowed for later display. He shifted and explained how produce could be pyramided toward the center by the use of boxes and boards for attractive display. The prospect, marveling at the other's knowledge of display, helped wherever he could. Ross consumed considerable time for this rearrangement, but he was building a foundation.

They started on the route, Ross joining in calling the wares. Between stops he injected selling

arguments, particularly designed to appeal to the prospect's pride of ownership, such as the advantage to the prospect of having his name in gold letters on his truck; how easy the truck rode; absence of jolting; 11-gal. gas tank; tires,



Housewife buying on a demonstration trip

etc. Revealing a keen insight into human nature he took a pocket-camera snapshot of the prospect on the seat. He told the prospect that he would send him the prints, which he could send to his friends back in his fatherland. The snapshots cost Ross a nickel the negative, a nickel the print, and a cent to develop. But he figured the picture would be shown by the proud owner to prospective truckmen. It's a little kindness to a client that Ross found pays.

Huckstering ended about 4 p. m., because, as Ross explained, housewives have bought for the day and one just couldn't sell advantageously after that hour. Ross drove the truck back to headquarters and invited his prospect into his car to talk things over. Together they figured anew what was bought, what was sold and exactly what was made.

Rare, indeed, is the first trip with all the helpful pep of prospect and salesman that does not prove a success. The prospect's spirits were boundless and invariably this is the moment when Ross makes his sale. But this case was an exception, which Ross discovered later.

Before the prospect's ardor was given a chance to cool, both were off to visit the body maker. Knowing his prospect's needs and desires Ross saved time by driving direct to the company producing the type of body wanted. After the body question was settled,

the prospect was driven to his home.

Arriving home it developed that while he was sold he must consult his wife before he would close. And the good woman—cautious always—wasn't so sure. So Ross started to sell the woman, saying just enough to drive an entering wedge. He has found it best to leave then, to let Mr. Man-of-the-house do the arguing and establish the foundation necessary to close the sale, returning the following evening when the groundwork is laid, to close the deal.

So about 7 o'clock the next evening Ross returned with candy for the kiddies and prints of the snapshots. He talked of everything but the sale of the truck. He recounted the incidents of the demonstration. He told of the sales made, the little, happy experiences. He knew she wanted to know from him—mistrusting her

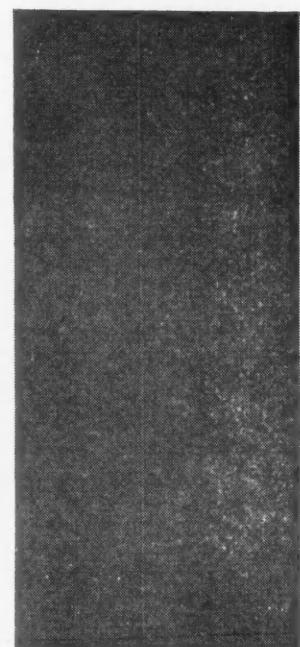
husband, in his enthusiasm—the amount cleared. Milady was wary—such sales wouldn't come every day. She was frank in stating her suspicion that the route was fixed.

Ross expected this and was prepared to meet it. To prove that the route was not fixed he asked her to outline any route she would. Let her and anyone else come along if she so wished. He would go along. He would repeat the procedure if so desired, the very next day. Surely he can not guess what streets she will have selected when he meets her in the morning. Certainly then the locality cannot be fixed.

The frankness of the offer, the putting it up to her, melted her. She sidestepped and before long, bit by bit, to save her face she yielded. The sale was cinched.

This sale, typical of many, indicates not only how Ross reaches and sells the produce vendors, but, of greater significance, shows the importance of vocational knowledge.

Another very important factor in the success of Ross is his after-sale contact. Ross does not terminate his contact with the sale, instead he follows the owner up very carefully. He makes it a point to learn of the man's route after it is established and arranges to meet him somewhere on this route at least once a month. This gives Ross an opportunity to keep his customers in line for future business.



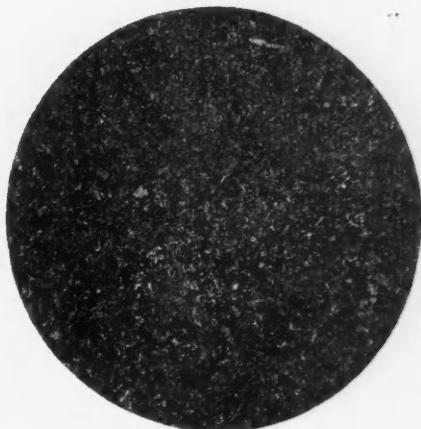
HEAT WEAKENS AXLES

Timken Recommends
That Axle Parts Be
Straightened Cold

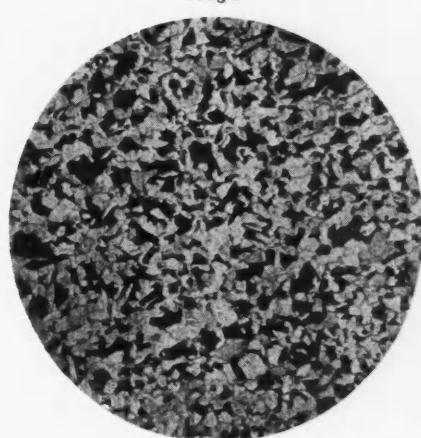
THE Timken-Detroit Axle Co. recommends that an axle center, knuckle or any axle part bent in service be returned to its original position by cold straightening. If heat is used because shop equipment does not furnish sufficient force to straighten cold the temperature should not be allowed to exceed 1200 deg., which is a very dull red that is barely visible in daylight and rather dull even in the dark. Heating to "cherry red" and allowing a part to cool may reduce the strength by a third or half.

Four micro-photographs on this page, furnished through the courtesy of the Timken-Detroit Axle Co., show what happens to the structure of steel used in axle parts when heated too much and allowed to cool. The outside of the part may look much the same as before heating but the photographs indicate clearly why the parts are weaker.

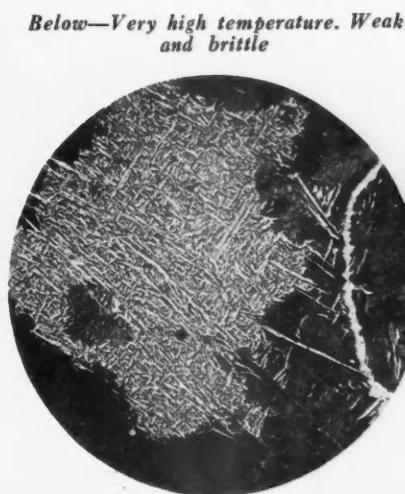
Micro-photographs magnified 100 times showing the effect of improper reheating and cooling on structure of steel for knuckles and arms



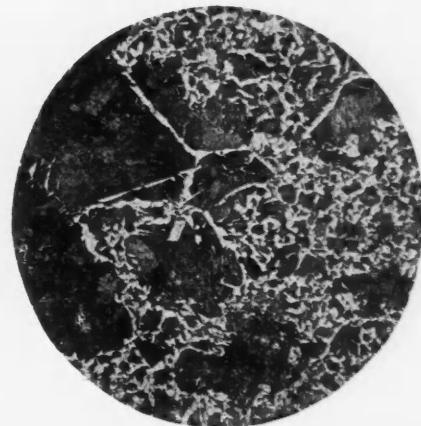
Above—Properly treated steel as furnished in original steering knuckle. Maximum strength and toughness



Below—Reheated just above critical point and cooled in air. Weak but tough



Below—Very high temperature. Weak and brittle



Below—Reheated to too high temperature—air cooled. Weak and not tough

KEEP DRIVERS SOLD

HOW to get and keep the good will of drivers, who admittedly have a direct influence in the selection of the make of a truck is a problem. That the driver often bears a direct influence on sales and that this influence is of sufficient significance to warrant careful consideration is reflected in the response of truck dealer executives to an inquiry on the subject. In the opinion of many of these executives cultivation of the driver is of such importance as to deserve a very definite place in the sales policy of their organizations.

The method of establishing driver contact varies but little among dealers, simple but entirely ethical means being employed in most cases. Reference to the practice of stimulating sales by commissions or gifts is, with one exception, conspicuous by its absence, and this exception decidedly deprecates the practice as a method of bygone days.

Finding jobs for drivers out of work seems to be the favorite method, with short courses of instruction in operation and service methods following as a close second, and contacting drivers through the service department third. Emphasis is placed particularly on the importance of treating the driver with every courtesy, not flattery, and taking his opinions and ideas seriously and considering them intelligently.

Many executives feel that the greatest good can be accomplished through the service department, not only through the rendition of prompt service, but by helping drivers to make their jobs easier. Drivers deserving credit for work well done should be commended to their employers, according to one executive. Another executive considers the driver of such importance that he secures a list of licensed truck drivers annually, from which he selects the worthwhile drivers for direct-mail circularization three times a year.



"Keeping the drivers sold on our trucks is my personal business," said B. H. McAhren, manager, White Truck Sales Co., Phoenix, Ariz. "It's the best contact one can make. I keep a file of the names and addresses of all men taking out truck drivers' licenses in the entire state. At some time during the year one of our salesmen makes a personal call of a few minutes on every driver in the list, mainly with the view of getting names of prospects and incidentally with the purpose of selecting from the total number of names those worth putting on our drivers'

mailing list. To these we send out a letter or some pertinent pieces of literature three or four times a year, usually something general, such as a checking chart on lubrication or an 'inspection routine' that the intelligent driver is likely to keep posted up in the garage, and always carrying a line in regard to our trucks where it will register the most lasting impression.

"Then, for six weeks in every year, we conduct a school for young truck drivers. The work is simple and rudimentary and is carried on in brief evening classes in our shop.

TO SELL OWNERS

Getting Jobs for Loyal Men Out of Work,
Soliciting Their Opinions and Giving
Them Quick Service, Help Break Down
Sales Resistance by Reaching the Owner
Through the Man at the Wheel

Federal Truck Co., Birmingham, Ala.: "We render assistance to drivers by helping them secure work and giving them advice and assistance in the matter of taking care of their vehicles. We figure that this helps us as much as it helps the driver, for it gives us an opportunity to keep his employer a satisfied owner of our trucks."

"We keep our eyes and ears open for truck jobs for the driver," J. T. Jenkins, manager truck department, Oakland, Cal., office of J. E. French Co., agent for Dodge Brothers, said. "We also try to sell the driver on the fact that he has a comfortable truck to ride in, with closed cab, four-wheel brakes, etc. Many times we work through the driver and endeavor to effect a sale

through him. We try to sell him first. Later we tell the driver that if there is anything wrong to come in at once and we will fix it. When he does come to the service department we see to it that his wants are taken care of as soon as possible. We also remind him that we expect him to give the truck a square deal, and we assure him that if he warrants commendation his boss will know about it."

T. E. Swain, manager of the Oakland, Cal., office of Reo Motor Car Co.: "Drivers know that we try not to let a good driver remain out of a job and that we will do anything in our power to that end. We realize fully how valuable a friendly driver is to us. They

(Turn to page 60, please)



Last year, out of a class of eighteen, twelve were already engaged in driving, and ten of these were driving trucks other than our make. The main object is to get those drivers to know our truck. They may or they may not influence a sale some day, but at any rate we have given them the chance to talk intelligently about our truck. And the good-will involved is velvet."

H. L. Smoots, sales manager

*The Commercial Car Journal
and Operation & Maintenance*



Truck dealer executives emphasize the importance of treating drivers with every courtesy. Drivers appreciate intelligent consideration of their ideas and opinions

February, 1929

FOUR WAYS OF



Three Bodies Re Wet Mix and One gate and Mixes

rod to the tail-gate on the inside so that a crevice is formed between the rod and the body sheet. Fine particles of cement flow into this crack and seal the water content of the mix.

The Wood underbody hydraulic hoist type F-2A is used on the 2-yd. bodies, and either the type F-1 underbody or type G-1 Hi-speed hydraulic is employed on the 1-yd. job.

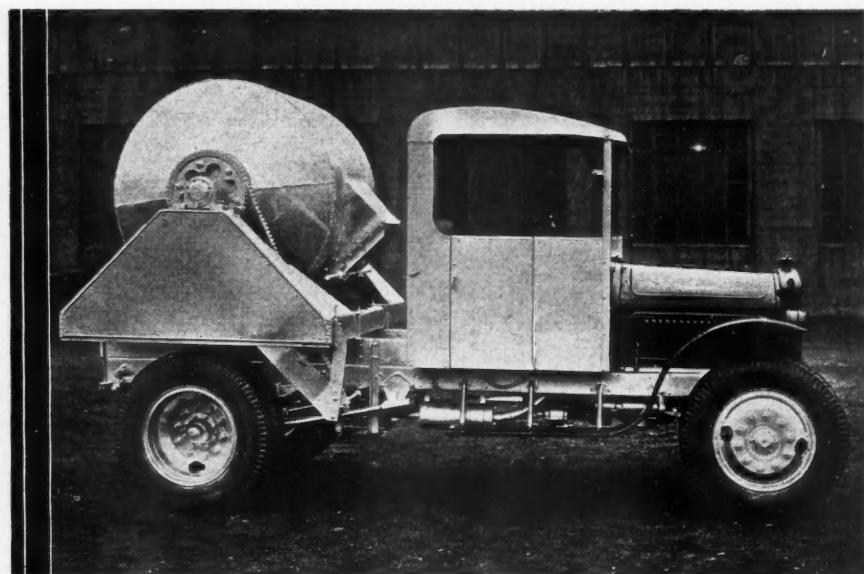
Fig. 1—The bullet-head and cylindrical construction eliminates corners in which concrete might stick

THE usefulness of the central mixing plant idea has been broadened by the development of special bodies that make possible the hauling of ready-mix concrete greater distances and the construction of special bodies that combine the functions of hauling and mixing, permitting delivery to any distance. Central plants are most always located near railroad sidings or river barge service and as near as possible to the approximate center of a delivery area. Here large quantities of concrete are mixed and loaded into trucks. Segregation of the mix while in transit is prevented either by the shape of the body or by mechanical agitation. The hauling and mixing type of body receives its load of dry aggregate from a central plant and hauls it dry to the construction job where water is added and the concrete is mixed in the body.

Of the ready-mix type, (Fig. 1) which depends on the shape of its body to prevent segregation, a bath-tub body is offered by the Wood Hydraulic Hoist & Body Co. This body was developed by A. G. Kerr, Seattle branch manager of the Wood Company.

As its name implies, this body is shaped somewhat like a bath-tub. Corners in the front of the body are avoided by rounded construction like the head of a bullet. The advantages claimed for this shape are that it presents no flat floor area on which the concrete might settle, and that it eliminates corners in which portions of concrete might stick. It carries a 2-yd. load of wet concrete or 3 yd. of dry material.

The tail-gate is of ordinary single-acting construction but is made water-tight by welding a $\frac{1}{8}$ in. round iron



Of the ready-mix type employing mechanical means of agitation is the Tru-Batch body, (Fig. 2) developed by the Avril Tru-Batch Concrete Co., Cincinnati, in collaboration with the Le Blond-Schacht Co. The body itself serves as the agitating mechanism and revolves at the rate of $5\frac{1}{2}$ r.p.m.

Simply constructed, the body consists of a 2-yd. welded drum, rotating on an axle equipped with self-aligning SKF roller bearings and supported on a channel and sheet steel frame, which in turn is carried on two sills running the full length of the chassis frame behind the cab. Power for rotating the cylinder is taken through a power take-off on the right side.

The body is filled and emptied

Fig. 2—Operated through the power-take-off, the body itself serves as the agitating mechanism

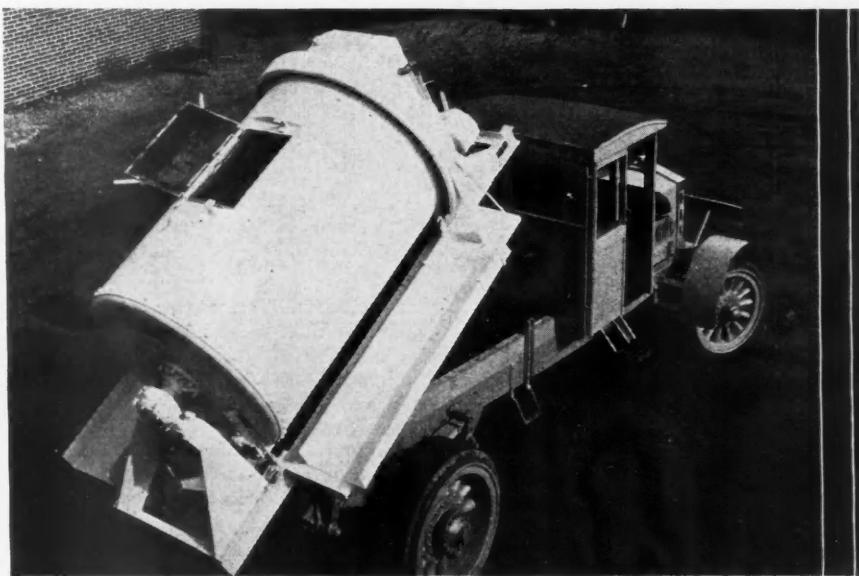
HAULING CONCRETE

*tard Segregation of
Hauls Dry Aggre-
at Destination*

through a door welded on the drum cylinder; the door is formed by an extension or lip. The gate, which is watertight, is of the sliding type operated by a rack and pinion mechanism.

Another body of the ready-mix type is the Clinton body (Fig. 3) designed by A. E. Hoffman, president, Clinton Motors Corp., Reading, Pa. This body also employs a cylinder to keep the mix

Fig. 3—The Clinton body is driven by a separate power unit and is raised by an underbody hoist



reached from the cab. Power is transmitted by chain and sprocket to a cut steel pinion which engages with a four-section ring-gear attached to the outer circumference of the tank at the front.

Loads are received through a swinging filler door 14 x 22 in. in the body of the tank, and are discharged through a 23 x 10 in. gate located in the rear. The gate, operated by a 30-in. extension ratchet handle, slides in marginated and slightly tapered grooves that automatically takes up wear.

The body offered by the American Truck Mixers Corp. of San Francisco, Cal., actually mixes the concrete (Fig. 4). It does not have a hoist and consists of a non-rotating, open-top cylinder with power-driven mixing shaft.

Mixing is accomplished by a series of giant double-locked fins mounted on a rotating shaft, which is driven by the truck engine through a power take-off

giving a final reduction of 120 to 1. With discharge gate open the mix is automatically forced out.

The body is a three-quarter cylinder built of steel and riveted in three sections. It is carried on four brackets riveted to the front and end flanges of the body and to the two rings joining the sections. The brackets are bolted to the chassis frame. The body can be easily removed by loosening these bolts, of which there are 16.

Water tanks are mounted crosswise above the mixing drum or are built directly into the body as desired. Water in the former type is supplied by gravity, while in the latter it is pressure fed. The tanks have a total capacity of 160 gal.

The discharge gate is opened and closed by a rod and lever within easy reach of the driver. A patented sliding gate controls the amount of discharge.



agitated, but differs mainly from the Tru-Batch in that the cylinder is driven by a separate power unit and is raised for dumping by an underbody hoist. This cylinder has capacity of three yards and is operated at a speed of about 11 r.p.m.

The tank is made of $\frac{1}{4}$ -in. boiler plate, with $\frac{1}{2}$ -in. heads riveted in and further reinforced by $\frac{3}{8}$ -in. welded steel disks. Two 4-in. trunnion shafts, revolving in heavy self-aligning roller bearings support the tank. The inside walls and ends of the tank are smooth.

Power to revolve the tank is supplied by an 8 hp. two-cylinder LeRoi engine, mounted between the cab and the front of the tank. The engine is equipped with throttle control, which may be

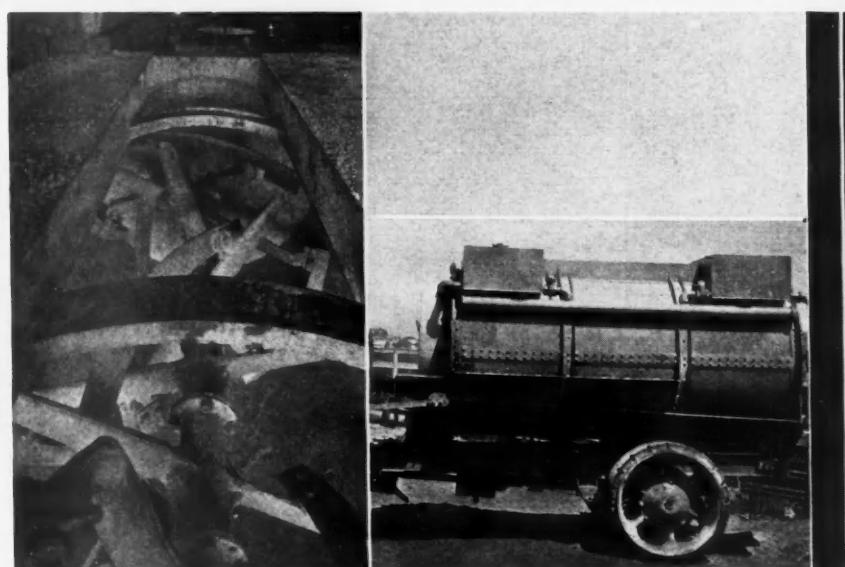


Fig. 4—This body mixes concrete at destination. Open top view shows power-driven mixing shaft

CHEVROLET

Maintenance Procedure Differs on Brakes, Carburetor and Chassis Lubrication



CONSTRUCTION of the six-cylinder Chevrolet commercial chassis and 1½-ton truck differs from the four-cylinder models in other respects than the engine and calls for some change in maintenance procedure. Rear brakes of the commercial chassis are of the external type, as before, but now have two bands with separate

adjustments. The carburetor has been changed and is supplied with fuel by an AC mechanical fuel pump.

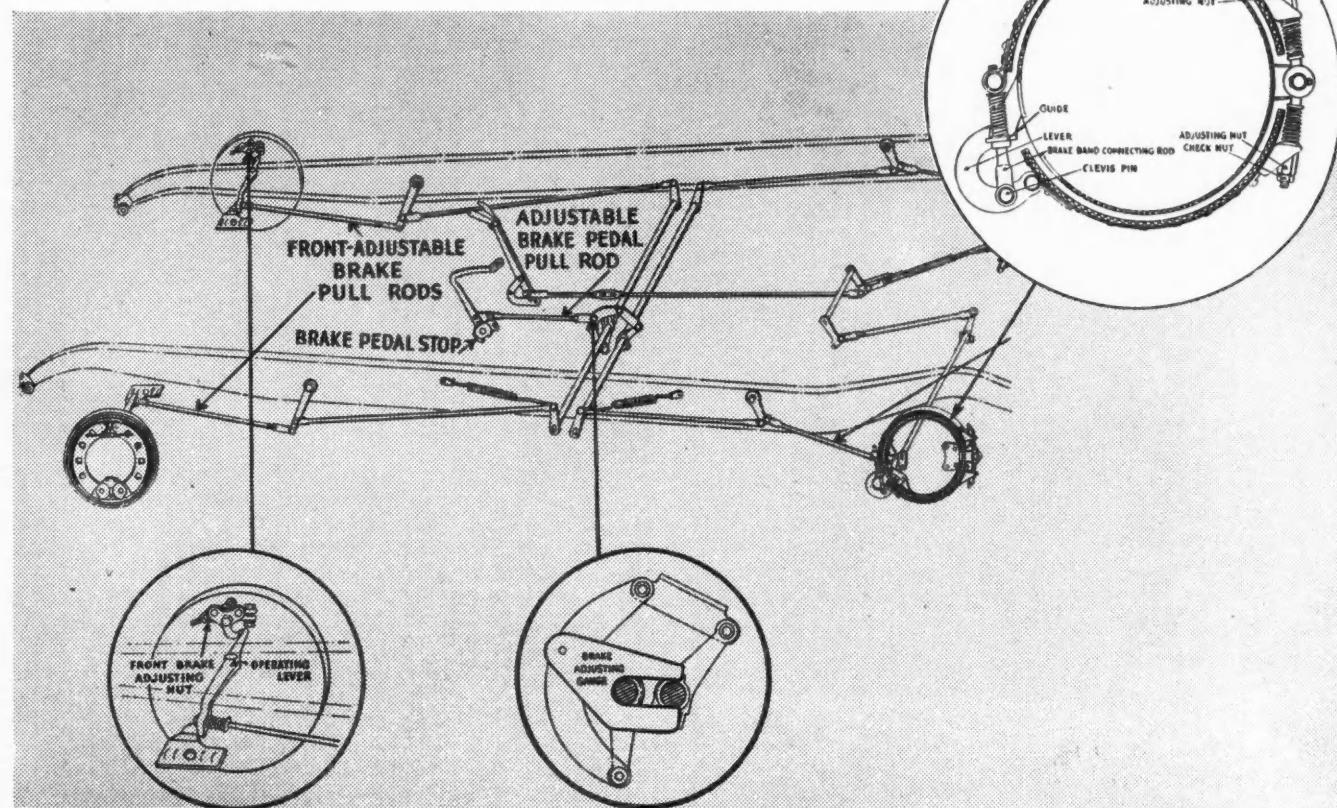
A venturi choke is a feature of the new carburetor. As shown on the opposite page, this choke is a cone-shaped part surrounding the venturi tube and is raised by a short lever. Note that there is a no choke valve or damper

in the air intake and only one adjustment.

Starting mixture is controlled by a single button on the instrument board which raises the venturi choke and opens the throttle the correct amount for starting. Air is drawn through the standpipe and forms a spray of gasoline. This construction reduces

(Turn to page 32, please)

Below: Brake layout of the six-cylinder commercial chassis. To adjust brakes perform these operations in order. Jack up all four wheels. Disconnect brake pedal pull rod and front and rear adjustable brake pull rods. Insert brake adjusting gage. Adjust brake pedal pull rod so that it meets brake proportioner, or yoke, when pedal is against stop. Remove brake gage and connect pedal rod. Adjust front and rear rods so that operating levers are against stops. Connect all brake rods. Adjust front wheel brakes by backing off lock nut and turning to left to tighten and right to loosen. Adjust so that brake just touches high spots then back off one-half turn and lock. Adjust rear wheel brakes. The adjusting nuts have lock nuts. Turn nut at rear of top band to right or left to give clearance of .015 to .025 in. Make same adjustment at rear of lower band. When adjusting lower band make sure that lug on eye end of lever is against clamp collar. All normal adjustments are covered by this procedure but in case of excessive wear or new bands it may be necessary to adjust the front of the bands as follows: Remove front clevis pin from lever and drop lower band with lever attached far enough to allow the brake band connecting rod to be turned. Turn rod right or left to bring about clearance of .015 to .025 between lining and drum. Have connecting rod in middle of slot. Reassemble parts



SERVICE FACTS

Maintenance Data

Breaker point gap .018 to .025 in.

Spark plug gap .025 in.

Engine oil,

S.A.E. viscosity

30 for ordinary use

40 for long, high speed trips

20 for winter

10 for temp. less than 10 above zero

Air pressure

30 by 5 tires, 70 lb. front

80 lb. rear

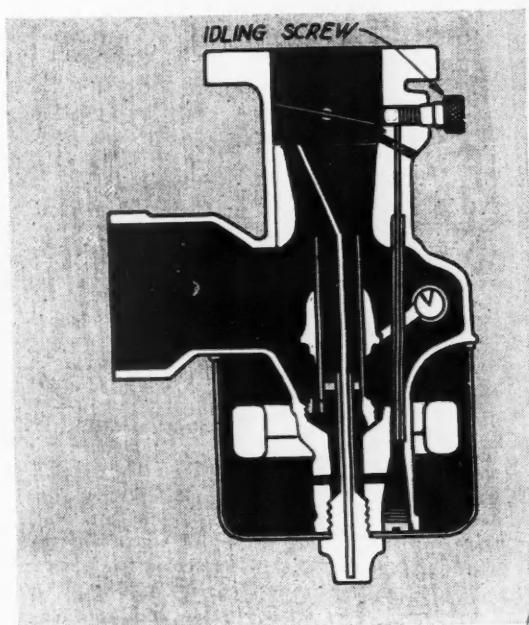
Balloon 35 lb. front

38 lb. rear

Oil pressure 12 lb.

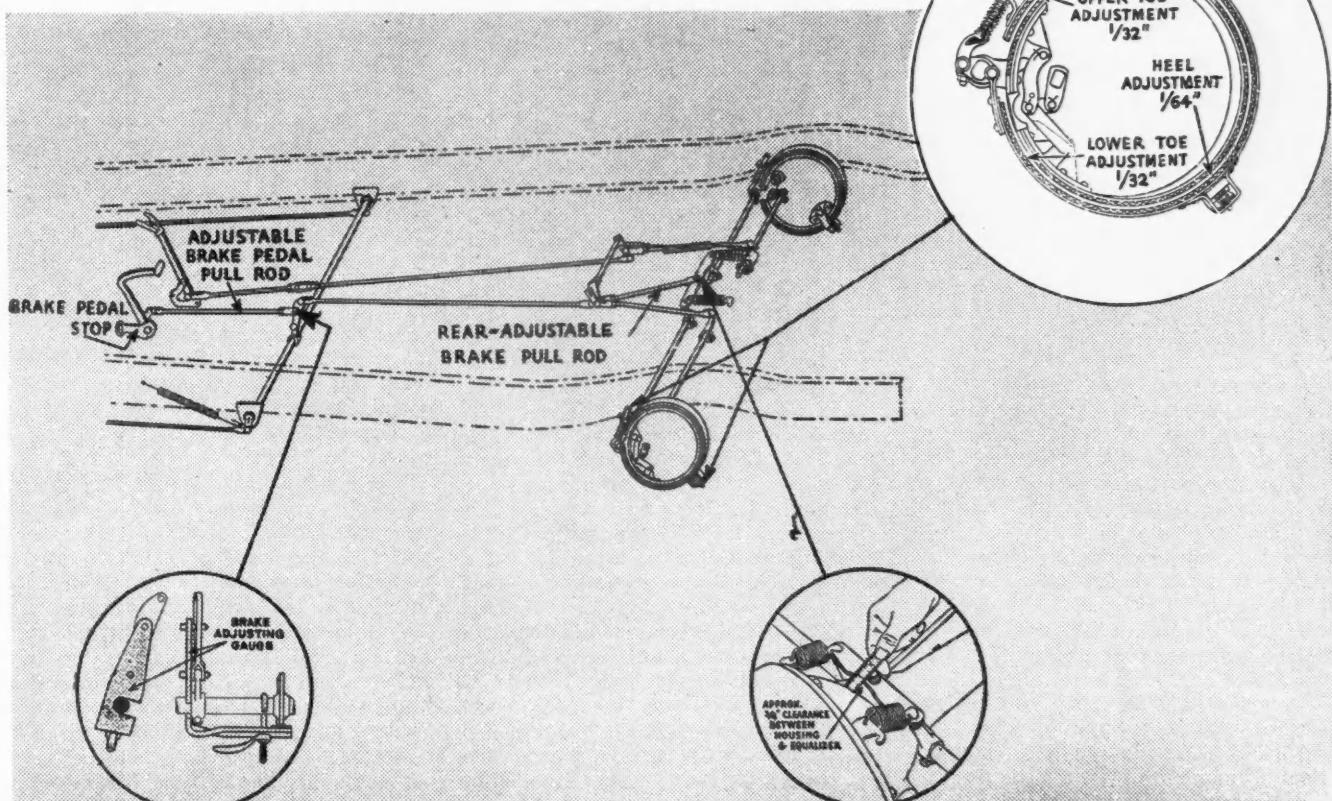
Clutch throwout bearing does not require lubrication

Water pump packing, preformed metallic type



The carburetor has only one adjustment, that for idling

Below: Six-cylinder truck brake assembly. To adjust brakes perform these operations in order: Jack up all four wheels. Disconnect brake pedal pull rod and front and rear adjustable brake pull rods. Insert brake adjusting gage. Adjust front adjustable brake pull rods so that front brake operating levers are against their stops. Connect front brake pull rods. Adjust rear adjustable brake pull rods so there is $\frac{1}{4}$ in. clearance between axle housing and rear brake equalizer. Adjust brake pedal pull rod to meet brake proportioner when pedal is against stop. Remove gage and connect. Front brake adjustment is the same as that of the commercial chassis. Adjust rear wheel brakes. Upper and lower ends of bands should have $\frac{1}{32}$ in. clearance between lining and drum, clearance at anchor should be $\frac{1}{64}$ in.



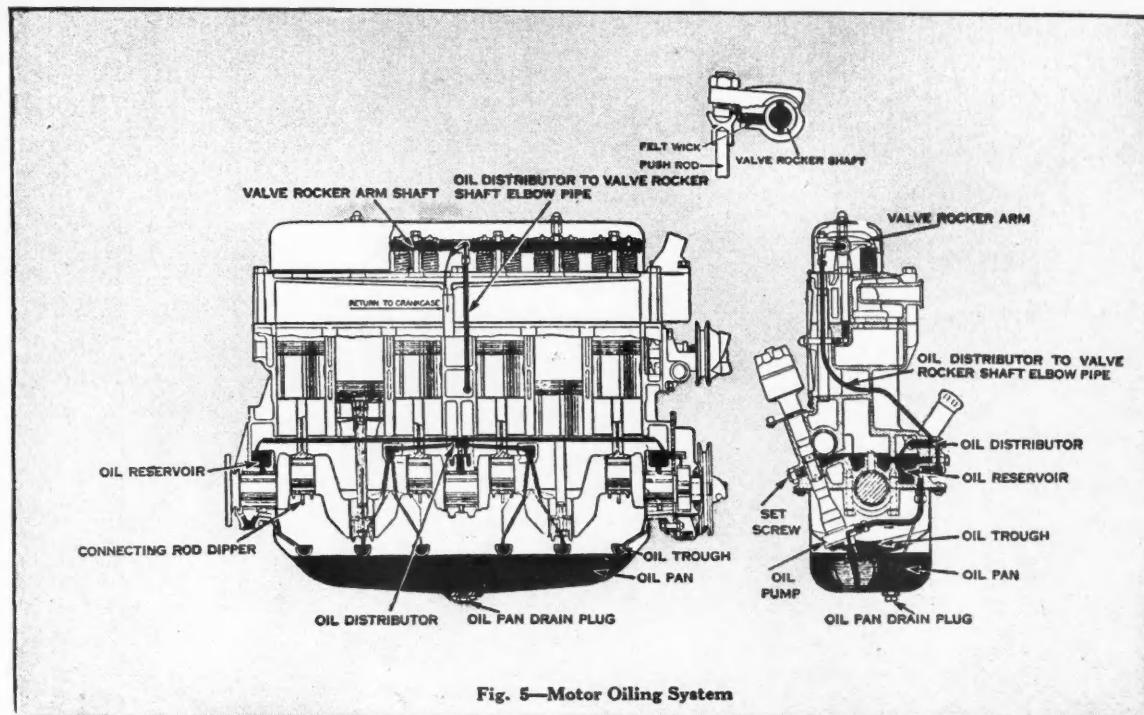


Fig. 5—Motor Oiling System

The oil distributor valve has two outlets, one which feeds pockets above the three main bearings and dipper troughs under the connecting rods. The other outlet supplies oil under low pressure to a hollow rocker arm shaft. Wicks feed oil to the rocker arm ends

(Continued from page 30) the amount of liquid gasoline entering the cylinders.

Chassis brake linkage of the commercial unit is adjusted by means of a gage which is similar to that for the four-cylinder models. However, a new gage is required for the six. Linkage

of the 1½-ton truck chassis likewise is adjusted with reference to a gage, which is quite different in construction from that used for the smaller chassis.

Rocker arms are lubricated through wicking which is supplied with oil from the engine lubrication system.

Method of adjusting brakes on the

commercial chassis and 1½-ton truck and other maintenance operations on the new Chevrolet models is given in the accompanying illustrations. Acknowledgment is made of the cooperation of the factory in supplying information on which this article is based.

A New Idea in Delivery

(Continued from page 21)

ered. Usually the driver takes the package from the customer and returns it to the store unopened. There is a chance for mistakes by the customer not returning the article specified on the call slip. Call packages will be opened by the inspector as soon as the helper returns to the truck and the contents of each package will be checked against the credit slip. In case they do not agree the package will be taken back to the customer immediately.

No ordinary "don't-want" report will be accepted by the inspector. If a helper returns with a package with the statement that the customer does not want it, the inspector or the driver will call on the customer and find out the reason for refusal. Another cause of returned packages in the C.O.D. group is lack of change. It is difficult for a driver to carry enough change to meet all demands. In the new body the cash register will contain \$100 in change and as the truck is never left unattended it is safe to carry this amount.

Salaries paid to the driver and inspector will be enough to attract responsible men. Savings due to reduction of number of trucks in use and miles operated because one truck of the

new design will take the place of two or more other trucks, will make it possible to pay more than average wages. In fact we expect to make substantial reduction in the cost of delivery and to improve delivery at the same time.

Drivers and inspectors will not wear uniforms, as they will not appear on the street except in special cases. When they call upon customers to straighten out delivery troubles the fact that they are not in uniform will impress the customer with the idea that these men are of greater responsibility than ordinary delivery men.

The body, as shown in the accompanying illustration of a model, is of the full-panel type. Dimensions are 13 ft. long, 6 ft. 6 in. wide and 6 ft. high. There are three doors in the rear, two of these are entrance doors for helpers while the center door 34 in. wide is for loading and unloading. The center aisle is the same width as this door. Shelving is 20 in. wide and is hinged. The floor boxes are 36 in. long, 24 in. wide and 36 in. high. There are three of these boxes on each side and one larger one near the driver for bulk deliveries. The body will be mounted very low on the chassis with bus-type wheel housings. Steps are provided inside the body, on each side, for use by helpers. There is a 30-in. tailboard and double doors above.

Burns Fuel Oil

(Continued from page 17)

Either fuel oil or gasoline may be used without change in adjustment in buses equipped with the new system, according to Mr. Queeney. He states also that performance of engines running on fuel oil compares very favorably with those running on gasoline. Buses operating on fuel oil are on the same maintenance schedule as others in the fleet and no additional wear can be found due to use of fuel oil. Crankcase dilution when using fuel oil is no greater than with gasoline equipment without the Godward generator. Trouble with smoke has been overcome by changing the location of the throttle valve.

The amount of unburned fuel in the exhaust is a measure of the efficiency of combustion of any fuel. The company has developed an electrical apparatus for measuring the percentage of such unburned fuel. Tests made for the company by Professors Autenreith and Baum of the College of the City of New York show carbon monoxide gas content of 2.5 per cent with wide open throttle and none idling. They indicate that content of less than three per cent can be maintained by a vehicle in regular operation.

FLAT RATE PRICE LIST

NUMBER 26

DODGE BROTHERS TRUCKS

Two-Wheel Brakes

B 1.	Wash off grease from one rear wheel and brake and renew grease retaining washers when wheel is off.	
	Dodge Brothers 2-wheel, internal and external... \$ 2.70	
	Graham Brothers 2-wheel, internal and external... 2.00	
	Graham Brothers 2-wheel, both internal 2.00	
B 2.	Wash off grease from one front wheel and brake and renew grease retaining washers, when wheel is off.	
	All models \$ 0.75	
B 3.	Service brake, make minor adjustment only.	
	Dodge Brothers 2-wheel, internal and external... \$ 0.90	
	Graham Brothers 2-wheel, internal and external... .90	
	Graham Brothers 2-wheel, both internal ..... .90	
B 4X.	Service brake, free up and adjust complete.	
	Dodge Brothers 2-wheel, internal and external... \$ 4.00	
	Graham Brothers 2-wheel, internal and external... 6.25	
	Graham Brothers 2-wheel, both internal 6.25	
B 5.	Service brake, 2-wheel type, adjust complete.	
	Dodge Brothers 2-wheel, internal and external... \$ 1.80	
	Graham Brothers 2-wheel, internal and external... 3.50	
	Graham Brothers 2-wheel, both internal 1.80	
B 6.	Hand brake, adjust complete.	
	Dodge Brothers 2-wheel, internal and external... \$ 0.90	
	Graham Brothers 2-wheel, internal and external... .90	
	Graham Brothers 2-wheel, both internal 1.80	
B 6X.	Hand brake, free up and adjust.	
	Dodge Brothers 2-wheel, internal and external... \$ 3.50	
	Graham Brothers 2-wheel, internal and external... 6.25	
	Graham Brothers 2-wheel, both internal 6.25	
B 7.	Service brake and hand brake, adjust both complete.	
	Dodge Brothers 2-wheel, internal and external... \$ 2.50	
	Graham Brothers 2-wheel, internal and external... 4.25	
	Graham Brothers 2-wheel, both internal 3.00	
B 9.	Outer rear brakes only, reline.	
	Dodge Brothers 2-wheel, internal and external... \$ 6.50	
	Graham Brothers 2-wheel, internal and external... 10.00	
B 10.	Inner rear brakes, reline.	
	Dodge Brothers 2-wheel, internal and external... \$ 5.40	
	Graham Brothers 2-wheel, internal and external... 6.50	
	Graham Brothers 2-wheel, both internal 6.00	
B 11.	All 2-wheel brakes, reline.	
	Dodge Brothers 2-wheel, internal and external... \$10.25	
	Graham Brothers 2-wheel, internal and external... 14.00	
	Graham Brothers 2-wheel, both internal 9.50	
B 13X.	Service brakes, install relined exchange bands or shoes and adjust.	
	Dodge Brothers 2-wheel, internal and external... \$ 6.00	
	Graham Brothers 2-wheel, internal and external... 9.50	
	Graham Brothers 2-wheel, both internal 5.50	

NOTE

Brake operations are given for the light delivery models based upon Dodge Brothers passenger car chassis and for Graham Brothers trucks. Although the name Dodge Brothers now applies to Graham Brothers trucks the name used when trucks were sold is used in this compilation.

The light delivery model was made with external service brake and internal hand brake in the two wheel brake models. Graham Brothers trucks in two wheel brake models were made with two types of brakes: external service and internal hand brake and double internal brakes.

Steeldraulic brakes are listed separately and hydraulic brakes on 1, 1½ and 2-ton models also are given a separate listing.

B 15.	Remove and replace or renew one-wheel brake drum after wheel is off axle.
	Dodge Brothers 2-wheel, internal and external... \$ 2.10
	Graham Brothers 2-wheel, internal and external... 2.00
	Graham Brothers 2-wheel, both internal 2.00
B 16.	Recondition one wheel drum after wheel has been removed.
	Dodge Brothers 2-wheel, internal and external... \$ 3.00
	Graham Brothers 2-wheel, internal and external... 3.50
	Graham Brothers 2-wheel, both internal 2.00
B 21.	Overhaul service brake operating mechanism and reline and adjust brakes.
	Dodge Brothers 2-wheel, internal and external... \$13.00
	Graham Brothers 2-wheel, internal and external... 16.25
	Graham Brothers 2-wheel, both internal 12.50

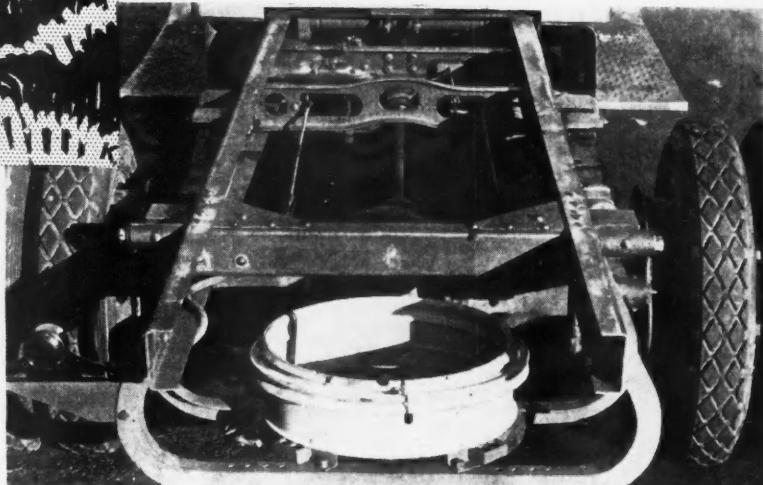
B 1.	Wash off grease from one rear wheel and brake and renew grease retaining washers when wheel is off.
	1, 1½ and 2-ton \$ 2.00
B 2.	Wash off grease from one front wheel and brake and renew grease retaining washers when wheel is off.
	All models \$ 0.75
B 3.	Service brake, make minor adjustment only.
	All models \$ 1.50
B 4.	Four-wheel service brake, adjust complete.
	All models \$ 2.40
B 4X.	Four-wheel service brake, free up and adjust complete.
	All models \$ 5.00
B 6.	Hand brake, driveshaft, adjust complete.
	All models \$ 0.90
B 6X.	Hand brake, driveshaft, free up and adjust.
	All models \$ 1.80
B 7.	Four-wheel service brake and driveshaft hand brake, adjust both complete.
	All models \$ 3.00
B 12.	Transmission brake, reline and adjust.
	All models \$ 3.25
B 13.	Four-wheel service brakes, reline and adjust.
	All models \$13.50
B 13X.	Four-wheel service brakes, install relined exchange bands or shoes and adjust.
	All models \$ 9.00
B 15.	Remove and replace or renew one wheel brake drum after wheel is off axle.
	All models \$ 2.00
B 16.	Recondition one wheel drum after wheel has been removed.
	All models \$ 2.00
B 21.	Overhaul four-wheel service brake operating mechanism and reline and adjust brakes.
	All models \$22.00

NEW AUTOCAR SIXES



Dispatch Models Offered in 1½ and 2-Ton Capacities Have Four-Wheel Internal Brakes, Hydraulic Front and Mechanical Rear

Dual rear tires and dual reduction rear axle are standard on the 2-ton unit. The spare tire is mounted beneath the frame on two cross brackets, to one of which the tail light bracket is attached



THE Autocar Co., Ardmore, Pa., is making two new six-cylinder trucks, one of 1½ and the other of 2-ton rating, which replace corresponding four-cylinder Model A units. The name Six-Cylinder Dispatch applies to both chassis, and the tonnage ratings are distinguished by the model designations SA and SD respectively.

Bevel gear rear axle and single rear tires are incorporated in the 1½-ton chassis and double reduction gear rear axle and dual rear tires in the larger truck. Both axles are of Autocar make. A six-cylinder, 3½ by 4½ in. engine and four-speed Brown-Lipe transmissions are employed in both models.

Lockheed hydraulic front brakes and mechanical rear brakes, both of internal type, comprise the four-wheel brake system. Brake pedal effort is proportioned by a yoke shown in one of the illustrations. The hand brake lever operates the same rear wheel shoes as the pedal, slots in the linkage taking care of the motion of the cross-shaft levers. Area of the foot brakes is 455 sq. in. and of the hand brake 320 sq. in.

Appearance was considered, as well as mechanical details, in designing the Dispatch models. The radiator, hood and cowl have been proportioned to give a pleasing impression. The company is building a de luxe

coupe type cab for the chassis which harmonizes with the chassis lines. A wood frame and metal panels are used in construction of the cab and it is supplied with one-piece ventilating windshield, metal visor, remote door controls, and automatic windshield wiper. Three-point suspension is employed, the third point at the rear being retained by two heavy coil springs. Chromium plating is used on radiator shell, lamps and similar exterior parts.

The gasoline tank is filled from outside the cab, the filler being recessed in the side of the cab, on the right side, and extending under

REPLACE TWO FOURS

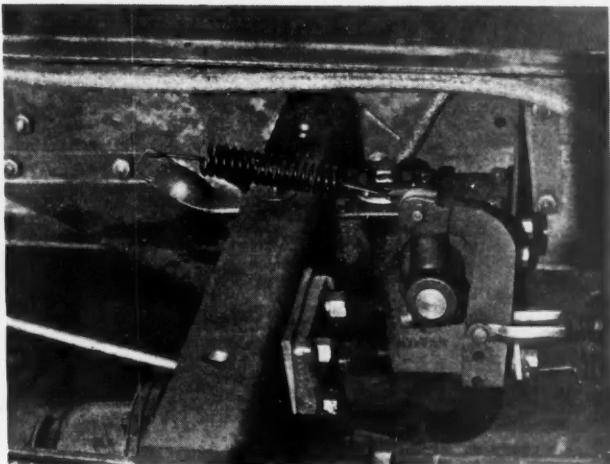
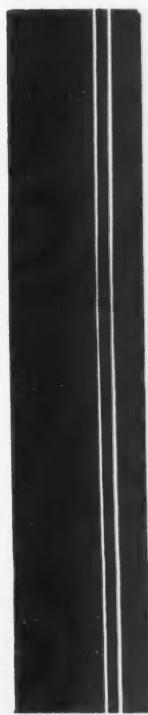
the seat to the tank. A gasoline gage is mounted on the instrument board.

This instrument board is indirectly lighted and it contains a speedometer and gasoline gage in addition to switches and meters.

A two-piece propeller shaft is employed, the first section being practically level. A rubber torque insulator is at the forward end of the shaft and metal universals at the center and rear.

Both automatic and manual spark control are incorporated in the ignition distributor. The carburetor which is equipped with an air cleaner is attached to a Swan type intake manifold with hot spot. The storage battery is located under the floor boards. Tapered roller bearings are used in transmission, axle bearings and wheels.

Equipment includes air cleaner, oil filter, Myers magazine oiler for clutch throw-out bearing, electric horn, front fenders and running boards, spring type front bumper and spare rim carrier in addition to the usual items.

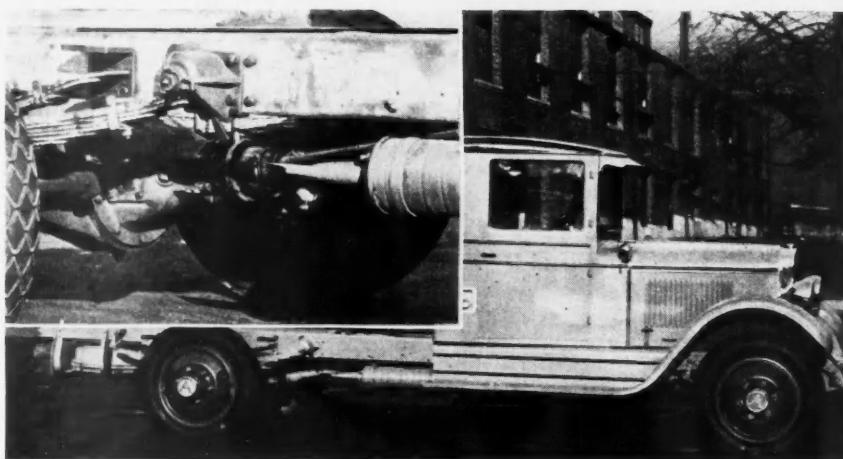
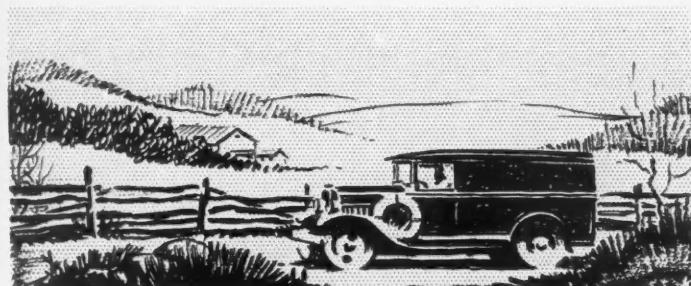


Above: Method of operating hydraulic front brakes and mechanical rear brakes. As pedal is depressed the clevis yoke to the right, moving arm of the master cylinder and a pull rod connected to rear wheel brakes

Right: Cab with visor, small side lights on band at rear of hood, crown fenders and chromium plating add to appearance. Dual reduction type rear axle is used on the 2-ton model

AUTOCAR SA AND SD SPECIFICATIONS

Model	SA	SD
Capacity	1½	2
Price	\$2,700	\$3,000
Wheelbase	150 or 174 in.	150 or 174 in.
Weight chassis	4900	5100
Engine	6 cyl.	6 cyl.
Size	3½ x 4½	3½ x 4½
Hp.	60 at 2000 r.p.m.	60 at 2000 r.p.m.
Carburetor	Zenith	Zenith
Feed	Vacuum	Vacuum
Gasoline tank	18½ gal.	18½ gal.
Ignition	Leece-Neville	Leece-Neville
Radiator, type	Tubular	Tubular
Circulation	Gear pump	Gear pump
Control	Thermostat	Thermostat
Generator and starter	Leece-Neville	Leece-Neville
Clutch	Long	Long
Type	2-plate	2-plate
Transmission	Brown-Lipe	Brown-Lipe
Speeds	4	4
Mounted	unit	Unit
Universals	1 rubber, 2 metal	1 rubber, 2 metal
	Spicer	Spicer
Rear Axle	Own	Own
Type	Bevel, full floating	Double reduction, full floating
Ratio standard	5.22 to 1	6.33 to 1
Ratio optional	4.55 to 1 or 6.12 to 1	5.78 to 1 or 7 to 1
Drive	Springs	Springs
Torque	Springs	Springs
Steering gear	Ross	Ross
Service brake, front	Lockheed int. hydraulic	Lockheed int. hydraulic
Rear	Internal mechanical	Internal mechanical
Hand Brake	Internal rear wheels	Internal rear wheels
Springs, front	40 x 2½ in.—11	40 x 2½ in.—11
Rear	54 x 3 in.—9	54 x 3 in.—9
Auxiliary		38 x 3 in.—4
Wheels	Steel disk	Steel disk
Frame	6 7/8 x 3 x 3/16	6 7/8 x 3 x 3/16
Tires, standard	32 x 6	32 x 6 dual rear
Length, seat to center of axle	63 5/8 or 87 5/8 in.	63 5/8 or 87 5/8 in.
Length, seat to end of frame	115 1/4 or 139 1/4 in.	115 1/4 or 139 1/4 in.
Overall length	223 1/8 or 247 1/8 in.	223 1/8 or 247 1/8 in.
Turning radius	48 or 56 ft.	48 or 56 ft.
Rear axle clearance	8 3/4 in.	8 3/4 in.



for Economical Transportation



This Great New Six-Cylinder 1½ Ton Truck—\$545

(Chassis only) f.o.b. factory
Flint, Michigan

32% more Power
7 inches more
Wheelbase
Economy equal to
its 4-Cylinder
Predecessor
Greater Speed
50% more Capacity
4 Speeds Forward
4-Wheel Brakes

At a price of \$545, the new six-cylinder 1½ Ton Chevrolet Truck makes available a dollar-for-dollar value that has never been duplicated in the commercial car industry! Its new six-cylinder valve-in-head motor provides a power increase of 32%. It accelerates faster in every gear. It operates smoothly and quietly. And its fuel-economy and cost of maintenance are fully as low as those of its famous 4-cylinder predecessor!

Combined with this increased power and finer performance are a wheelbase of 131 inches and a rugged 189-inch frame—providing a carrying capacity of 1½ tons, with load space up to 9 feet. Throughout the entire chassis are found basic improvements that contribute to its outstanding performance, economy and safety: perfected four-speed transmission . . . ball bearing steering mechanism . . . powerful, quiet 4-wheel brakes, with independent emergency brake . . . and a completely equipped instrument panel!

Investigate this remarkable truck—extremely dependable and economical, it is ideally fitted for *your* business!

1½ Ton Chassis, \$545 1½ Ton Chassis (with cab), \$650 Light Delivery Chassis, \$400
Sedan Delivery, \$595. All prices f. o. b. factory, Flint, Michigan

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN
Division of General Motors Corporation

Q U A L I T Y A T L O W C O S T

AFTER

Regulation

H.R. 12380, the designation of a bill for the regulation of interstate operation of motor buses on public highways, has been dumped into a waste-basket and its sponsor, Mr. Parker, has substituted for it H.R. 15621. This new bill so well disposes of the objections to the old that proponents of bus legislation have begun to nurse a feeling that it's all over but the voting.

Dispute over H.R. 12380 centered chiefly on three points: rate regulation, the so-called grandfather clause, and the method of administration.

In the matter of rate regulation the complaint feature of the old bill has been completely eliminated in the new. The new measure contents itself with providing that "all rates, fares and charges of motor carriers shall be stated in money and shall be just and reasonable," and that the carrier may not depart from these rates except upon due notice.

Thus is buried one of the big bones of contention.

The grandfather clause of the deceased H.R. 12380 provided that *bona fide* operation on a certain date was merely *prima facie* evidence as to the public convenience and necessity of such operation." Mr. Parker's revised effort stipulates that if a motor carrier, or its predecessors in interest, was in *bona fide* operation over any route on Nov. 1, 1928, and (except as to seasonal service or interruptions of operation over which the applicant or a predecessor in interest had no control) continuously has been so operating since that date, such motor carrier shall, after satisfying the administrative body as to the *bona fides* of its operation, receive a certificate of public convenience and necessity.

This revision excludes all possibility of any interest inimical to such motor carrier disputing the public convenience and necessity of the service he has been rendering. The old bill's "*prima facie* evidence" phrase was a weapon which the inimical interests could, if they so chose, have wielded with no small harm to the small independent operators.

The changes in administrative stipulations are too long for treatment here, and at that may still further be changed because the Interstate Commerce Commission has suggested that certain ambiguities be cleared up and that the discretionary power of the commission in the granting of certificates be defined accurately.

Since there is little likelihood that

H.R. 12380, the designation of a bill for the regulation of interstate operation of motor buses on public highways, has been dumped into a waste-basket and its sponsor, Mr. Parker, has substituted for it H.R. 15621. This new bill so well disposes of the objections to the old that proponents of bus legislation have begun to nurse a feeling that it's all over but the voting.



any one of the groups interested will actively oppose the new Parker Bill, supporters of interstate bus regulations are preparing to celebrate an occasion whose realization is now but a matter of congressional convenience.

Right here it may not be amiss to urge motor truck interests to exercise from now on a greater vigilance than ever.

For the present interstate truck legislation may be down, but it isn't out.

Accounting

The trade-in allowance survey published in the January issue of this journal revealed two facts that could not be incorporated in the tabulated results.

One was that despite the concentrated educational cannonading of manufacturers and trade publications during the last few years a very large portion of the truck dealer field continues to keep its accounts in either a very garbled, \$3-a-week-office-girl style, or else doesn't keep them at all.

The other fact was that most of the dealers who answered our questionnaire with figures that ran into cents

HOURS

were successfully coping with the problem of over-allowances.

It is inevitable that we should conclude that a system of exact accounting can inoculate a dealer's business against the disease of profit consumption.

Kentucky

Truckmen of the Blue Grass State were prodded into defensive action a few weeks ago when the Kentucky Tax Commission announced it had come to the conclusion that truck capacity ratings of manufacturers were inaccurate, that it had found 1½-ton trucks carrying as much as 3 tons, and that therefore it had decided to raise the ratings.

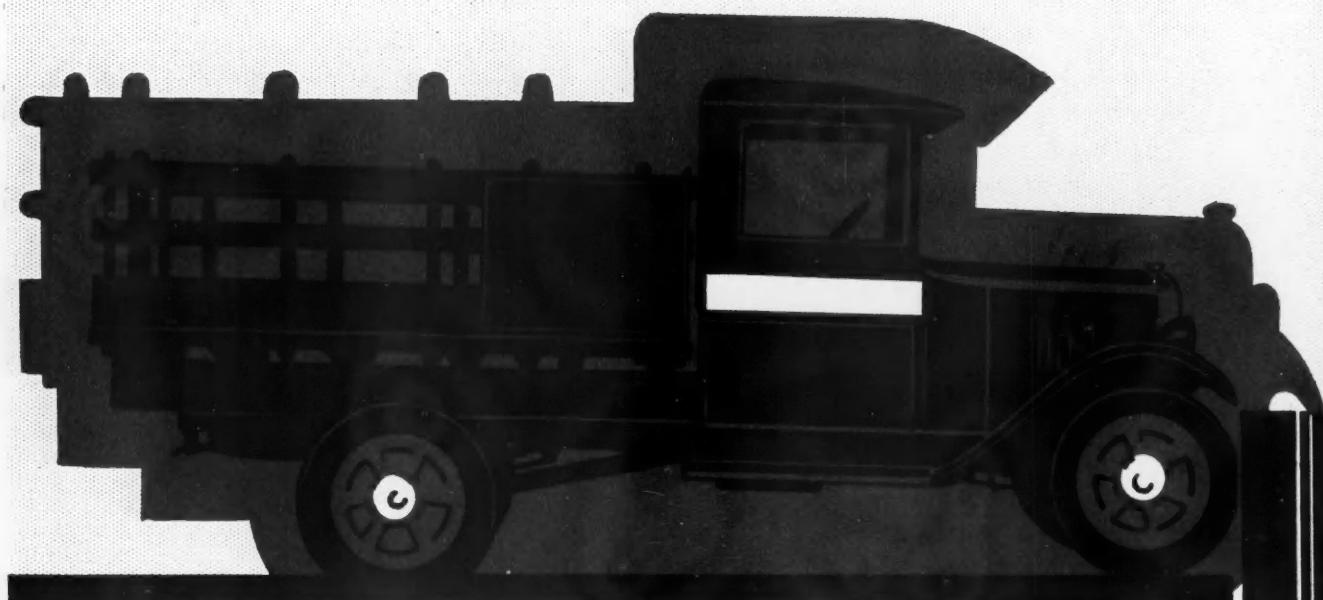
Since this ruling meant that they would have to go down deeper into the old sack and come up with an additional \$400,000 or so for taxes, the truck operators very properly objected to the high-handed measure, instituted a few suits, and to date the lower courts have sustained them in every case that has come to our attention.

Reviewing the arguments of one case, it appears that the tax commission doffed its administrative robe and donned legislative garb. This, it seems, was masquerade pure and simple because the Legislative Act of 1920 provided that owners must register their trucks with their county clerks on capacities as fixed by manufacturers. Truck operators contended it was the intent of the act that the license fee be based on these capacities and not on arbitrary ones.

It is not likely that the tax commission will accept this unmasking without protest, and it is to be expected that the case will be taken to a court of appeals. If the commission there sustains another reverse we are beset by an unshakable premonition that the result will be but the beginning of agitation for new legislation. And when a new law is being framed Kentucky truck operators should be in company front formation ready to have a say in the proceedings.

The same applies to truck owners in other states. Many legislatures meet this year, an occasion always marked by the birth of a bevy of bills on this, that and heaven help us. In such an open season for asinine proposals, it would be expecting the miraculous not to expect bills dealing with automotive vehicles. Truck interests in each state should be in position to trip prejudicial and burdensome measures before they gain momentum.—G.T.H.

MORE POWER FOR

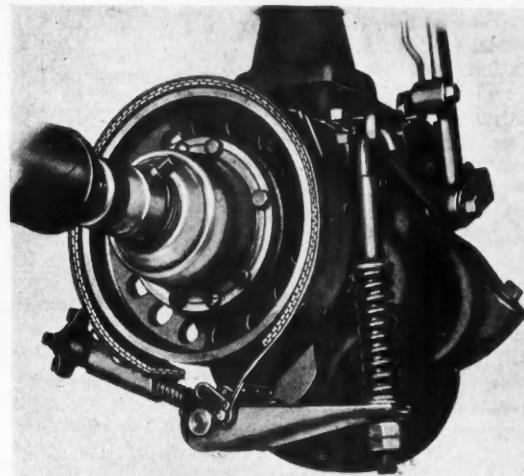


GENERAL Motors Truck 1929 Models T-11 and T-19 bear the same designation as last year but they incorporate changes in engine, axle and brakes, as well as refinements of smaller parts. Pontiac engines are used as before but power of the new engine is 58 hp. at 3000 r.p.m. compared with 43 at 2400 r.p.m. last year. Steeldraulic four-wheel brakes are employed on the T-11 and Bendix three-shoe four-wheel brakes on the T-19. Hotchkiss drive replaces the former torque tube and hand brakes now operate on driveshaft drums. Rear axle of the T-11 is patterned after the Oakland, and a Timken spiral bevel rear axle is embodied in the T-19.

Bore and stroke of the new Pontiac engine have been increased from $3\frac{1}{2}$ by $3\frac{3}{4}$ to $3\frac{5}{16}$ by $3\frac{7}{8}$ in. This is an increase in piston displacement of less than 10 per cent, 186 to 200 cu. in., but power is nearly 20 per cent more. Inlet valves are $1\frac{3}{16}$ instead of $1\frac{1}{4}$ in., and the lift is $5/16$ instead

The new General Motors Truck Model T-19 with standard stake body

Hotchkiss drive is employed on Models T-11 and T-19. The parking brake is of the drum type with hand adjustment of band



of $9/32$ in. A $1\frac{1}{4}$ in. Marvel carburetor is now fitted, and intake passages have been increased $\frac{1}{8}$ to $1\frac{1}{4}$ in. in diameter.

The transmission in the Model T-19 is a new four-speed unit employing heavier gears and shafts and different gear ratios. First and reverse speeds are faster, being 5.55 to 1 and 5.7 to 1 respectively, compared with 6.87 and 6.98 to 1

last year. Second and third speeds are virtually unchanged.

Other changes in the new models are as follows: Model T-11—no kick-up in front of frame, heavier front axle, larger tires, rear springs $\frac{1}{4}$ in. wider. Model T-19—heavier transmission, three-point cab mounting, heavier front axle, larger brake drums.

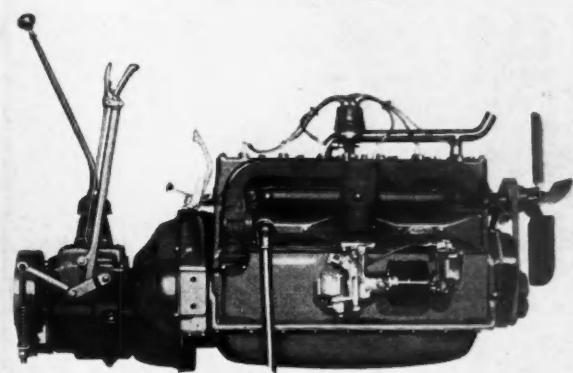


GMT LIGHT JOBS

Larger Pontiac Engine, Heavier Axles, New Brakes and Hotchkiss Drive Now Incorporated in T-11 and T-19 Models. Latter Has Three Tire Options

Lovejoy shock absorbers are mounted front and rear on the T-11 chassis. Standard equipment of this model includes front and rear fenders, running boards and aprons. The Model T-19 is supplied with cowl and dash, running boards and fenders. Front and rear fenders are used with 5.50/20 balloons and 32 by 6 in. tires. Rear fenders are omitted and short running boards employed with other tire equipment.

Model T-19 is available with three tire options: 5.50/20 six-ply balloons front and 32 by 6 truck type



This new Pontiac Six engine is the powerplant now used in the Model T-19. The Model T-11 has the same engine with an inertia type air cleaner and different fan. The latter model has a three-speed transmission and the former a four-speed

on rear; 30 by 5 single front and dual rear; 32 by 6 front and 43 by 7 in. rear. Maximum gross weight rating is 6000 lb. with the first combination and 8000 with the others. The rating includes weight of chassis, body

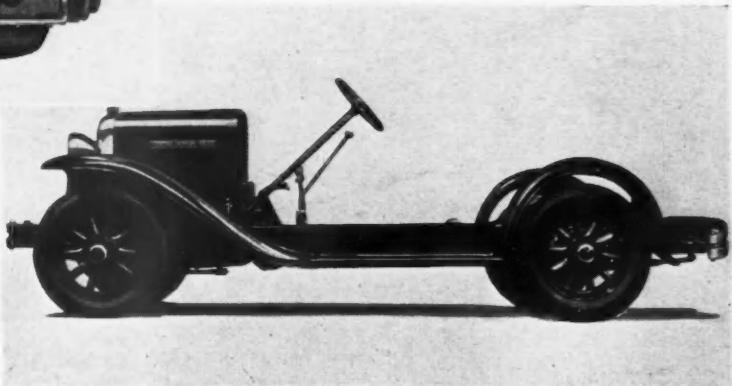
and load. Models T-11 and T-19 are the first to be announced since the General Motors Truck Corp. adopted the gross weight plan of rating.

*The Commercial Car Journal
and Operation & Maintenance*

Specifications for GMT T-11 and T-19 Models

Model	T-11	T-19
Capacity		
Total Gross Weight		
Allowance	3800 lb.	8000 lb.
Chassis capacity	1915 lb.	5050 lb.
Price	\$585	\$745
Wheelbase	109 $\frac{1}{2}$ in.	127 $\frac{1}{4}$ in.
Weight chassis	1885 lb.	2950 lb.
Engine Make	Pontiac	Pontiac
Size	6-3 5/16 x 3 3/8 in.	6-3 5/16 x 3 3/8 in.
Hp.	58 at 3000 r.p.m.	58 at 3000 r.p.m.
Displacement	200.3 cu. in.	200.3 cu. in.
Carburetor	Marvel	Marvel
Feed	A C pump	A C pump
Gasoline tank capacity	11 gal.	15 gal.
Location	under rear floor	under driver seat
Ignition	Delco-Remy	Delco-Remy
Radiator		
Type	flat tube and fin	flat tube and fin
Circulation	pump	pump
Capacity	12 qt.	12 qt.
Generator and Starter	Delco-Remy	Delco-Remy
Clutch	Own	Own
Type	dry plate	dry plate
Transmission	Own	Own
Speeds	3	4
Mounted	Unit	Unit
Universals	two metal	two metal
Rear Axle	Own	Timken 5261 N
Type	spiral bevel	spiral bevel
Ratio standard	4.42 to 1	semi-floating
Ratio optional	5.2 to 1	6.14 to 1
Drive and Torque		5.57 to 1 and
Steering Gear	Jacox worm & nut	6.83 to 1
Service Brake, Front	Bendix 3 shoe	Springs
Rear	Steeldraulic	Jacox worm & nut
Hand Brake	Driveshaft	Bendix 3 shoe
Springs, Front	36 x 2-7 leaves	Driveshaft
Rear	54 x 2-8 leaves	38 x 2-7 leaves
Wheels	Wood	50 1/4 x 2 1/2 - 8 leaves
Frame	5x1 1/4 x 5/32 in.	Mallesable iron
Tires, Standard Front	Balloon 5.00/19	6x2 1/4 x 3 1/16 in.
Rear	Balloon 5.50/19	32 x 6
Length, seat to center of axle		34 x 7 *
Length of loading space	69 in.	52 1/4 in.
Length, seat to end of frame		91 in.
Width of frame (rear)	44 in.	37 in.
Turning Radius	19 ft. 7 in.	20 ft. 6 in.

* Two other options.



The Model T-11 is also powered with the new Pontiac Six engine



NEW TRUCK SALES

Complete Figures for November, 1928,

		Acme	American La France	Attarbury	Brockway	Chevrolet	Commerce	Diamond T	Federal	Ford	Garford	G. M. C.	Gofredson	Graham Bros.	Gramm	Indiana	International	Larabee	Mack	Pierce-Arrow	Riley	Reo	Republie	Schacht	Selden	Service	Sterling	Stewart	Studebaker	Whippet	White	Willys-Knight	Total Sales by State including Federal Districts				
ALA.....	Nov.				1	1373		1	35	427		95		141		10	172		21			17	3						2	20	24	2,358					
ARIZ.....	Nov.					25				52		5		33			9		2			2							1	1	1	133					
ARK.....	Nov.					70		16		1	83		6		8		1	15		6			5					1	3	3	194						
CAL.....	Nov.	1		21		135			19	762	1	93	2	262			43		29			89	3				19	8	22	6	60	2	1,730				
COL.....	Nov.					96				85		10		15			13					2							2	14	1	24					
CONN.....	Nov.					7	8	102		2	12	150	1	36		77		21		31	4	4	32	1				8	8	5	9	59					
DEL.....	Nov.							8			29		3		8			5		1	1		2									59					
D. C.....	Nov.					10	1	23		13		84		9		5		1	2		6	1	2	10				2	1	1	1	9	150				
FLA.....	Nov.					1	128			1	199		7		17			6		3			19								1	3	3	355			
GA.....	Nov.						43				45				6		7		1			4		2						1	8		117				
IDA.....	Nov.							21			34		4		15			7					4								1	2		90			
ILL.....	Nov.					5	231		46	1	385		33	2	90		3	95		11	2	47					1	1	2	5	10	11	3	1,019			
	Dec.	1	2	44		44	44	5	5	357		20	1	57		1	57		16	2	2	18					2	29	5	11	3	635					
IND.....	Nov.					4	211		3	3	301		31		46		16	36		1	1		13					3	7	6	1	1	69				
IA.....	Nov.						146		1	2	154		14	2	46		2	50		2		1	19								1	9	1	2	46		
KAN.....	Nov.						56		3	1	101		8		14			22		5			3							3			212				
	Dec.	15					15		1		35		2		7								5										70				
KY.....	Nov.						121		2	2	131		15		27		3	37		4		1	5		3	1		12	1	4	1	1	375				
LA.....	Nov.						76		10		208		17		26		1	39		5			4							1	1	2	1	380			
	Dec.						10			1	126		7		12		20		2		2		6											184			
ME.....	Nov.						32			1		51		4		27			8	1			8								3			136			
MD.....	Nov.	2	1		7	8	51	2	2	4	154	147	16	18	31		1	17	15	12	28	1	13	4			2	1	2	3	5	1	320				
	Dec.	1			27		1	7	5	5					17			15		28			12		1	12	1	1	2	3	3	15	1	320			
MASS....	Nov.	2	1		32	9	164		6	5	336		68		100			60	6	36	4		69		4	9	10	7	7	19	7		933				
MICH....	Nov.	1					1	188		5	468		36	4	51			31		4	5		38								2	7	2	2	674		
MINN....	Nov.						159		42		293		18		41			71		5			11	1							2	2	6	1	615		
	Dec.									4	184		8		15			33		2			9											307			
MISS....	Nov.								61			62		6		6			17		1			4									1	1	1	1	161
MO....	Nov.					5	1	165		17	1	335	1	30		69	1	11	52		20			19			5		4	8	5	1	758				
	Dec.					37			3	1	174		28		33	1	1	34			20			13			1		4	3	3	1	346				
MONT....	Nov.								56	25		41	9	5	2	20	7		12												1	3		1	170		
	Dec.																																		57		

Figures in this table are compiled by R. L. Polk & Company, of Detroit, except Illinois, which is compiled by the Automobile Sales Record Corp., of Trenton. Readers desiring tow



BY MAKES AND STATES

and Partial Reports for December

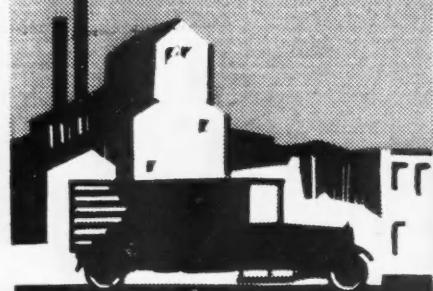
		Total Sales by States Including Miscellaneous																																					
		Acme	American La France	Atterbury	Autocar	Brookway	Chevrolet	Commerce	Diamond T	Federal	Ford	Garford	G. M. C.	Gouldredson	Graham Bros.	Graham	Indiana	International	Latrabe	Mack	Fierce-Arrow	Relay	Reo	Republic	Schacht	Selden	Service	Sterling	Stewart	Studebaker	Whippet	White	Willys-Knight	Total Sales by States Including Miscellaneous					
2,356											126				104		17															316							
133											8				10		1		12													34							
144																																							
2,173											27				1		40		8		9											95							
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TOTAL	Nov.	Sales by Makes	23	69	6	218	175	7,666	5	208	222	9,742	23	1,175	18	2,496	3	82	1,847	27	487	62	22	1,005	42	14	29	6	100	115	133	242	478	41	27,964				

is compiled by the Robinson's Advertising Service, of Springfield; and New Jersey, which
and county lists of owners in any section may address any of these three companies.

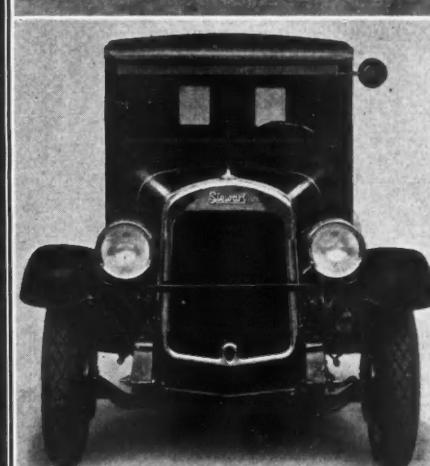
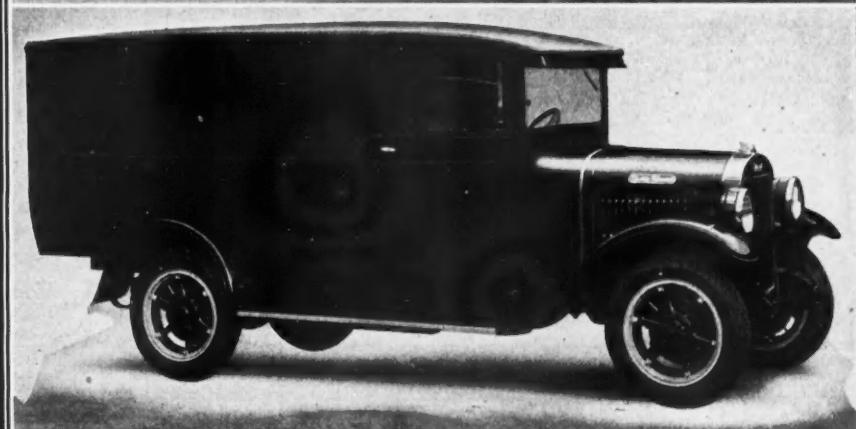
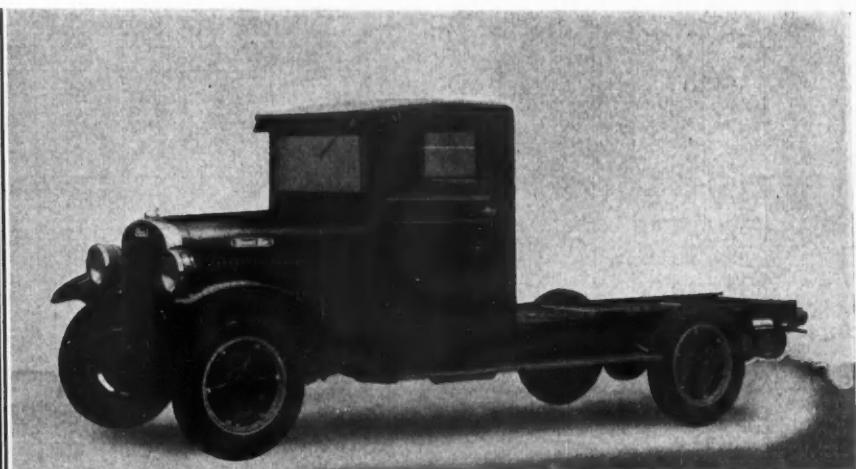
STEWART HAS AXLE

Specifications of Stewart Model 26

Model	26X
Capacity	2-ton
Price, bevel	\$2,190
Worm	\$2,290
Wheelbase, Stand- ard	165 in.
(Extra) long	190
Short	148
Weight, chassis	5000
Engine	Lyc. TF
Size	6-3½ x 5
Displacement	310 cu. in.
Carburetor	Stromberg
Feed	Vacuum
Gasoline tank	20-gal.
Ignition	Delco-Remy
Cooling, type	Tubular
Circulation	Pump
Generator Starter	Delco-Remy
Clutch	Fuller
Type	Plate
Transmission	Fuller
Speeds	Four
Mounted	Unit
Universals	Spicer
Rear Axle	Timken
Type	Bevel or worm
	Full Floating
Steering Gear	Ross
Service Brake	Bendix 4-wheel, me- chanical
Hand Brake	External on driveshaft
Drive	Springs
Torque	Springs
Springs:	
Front	40x3 in.-9
Rear	50x3 in.-11
Wheels	Steel Spoke
Frame	7½x14 in.
Tires, stand- ard	32x6 dual rear
Optional	34x5 front 34x8 s. rear



Refinements in Radiator, Hood,
Fenders and Running Boards
Enhance Appearance of All
Models for 1929



Stewart two-ton Model 26X equipped with stake body and closed cab

Standard de luxe panel body mounted on the 1929 Buddy Stewart one-ton six

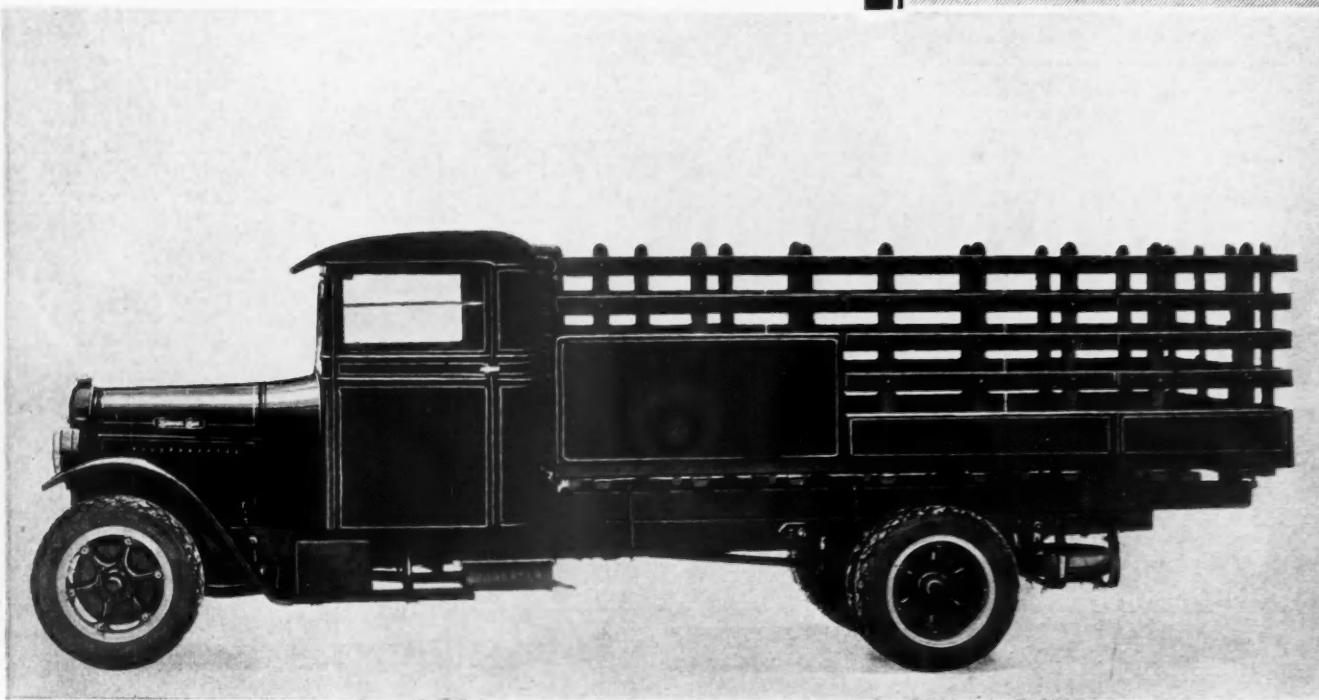
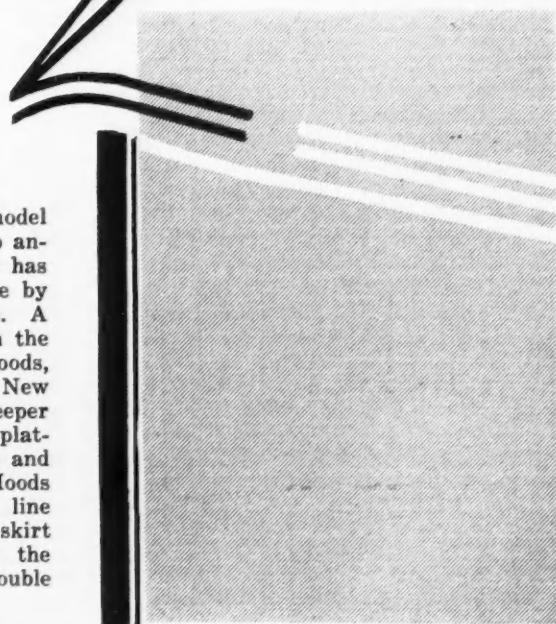
Front view of a 1929 Stewart, showing refine-
ments in radiator, hood
and cowl design. Note
cap, bib and fenders

OPTION ON 2-TON

IMKEN bevel or worm rear axles are optional on Stewart's new two-ton chassis. Equipped with bevel rear, the model is designated as 26X and lists at \$2,190; with worm the designation is 26XW and price, \$2,290. This new unit is also featured by a large bus type six-cylinder engine, four-speed transmission, four-wheel Bendix brakes and low frame height.

The gear ratio of the bevel axle is 6.8 to 1, while the standard ratio of the worm axle is 7 1/3 to 1 with specials of 6 1/4 to 1 and 8 to 1. Standard tire equipment is 32 x 6 pneumatics with dual rears, but 34 x 5 in. pneu-

In addition to this new model the Stewart Truck Corp. also announces that its entire line has been improved in appearance by refinements in exterior parts. A new note has been struck in the design of the radiators, hoods, fenders and running boards. New radiators are higher and deeper and embellished with nickel-plated shells, new radiator caps and sheet metal bibs in front. Hoods and cowls on the improved line are wider and metal bands skirt the rear of the hoods at the cowls. Louvers are set in double



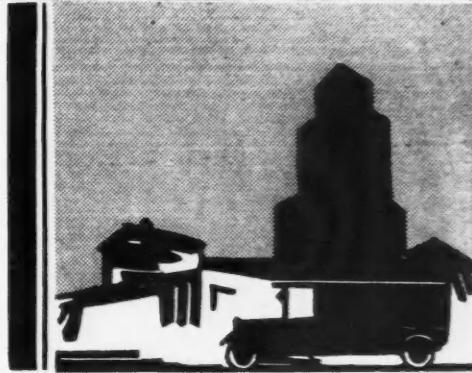
matics, front, with 34 x 6 solid, rear, are offered as optional. Single pneumatics, 34 x 7 in., furnished extra.

The hook-up and brake linkage is simple, requiring no equalizers and only one adjustment for ordinary wear. These brakes are of the internal type operating in pressed steel drums, 16 x 2 1/2 in. front and 17 1/4 x 3 in. rear.

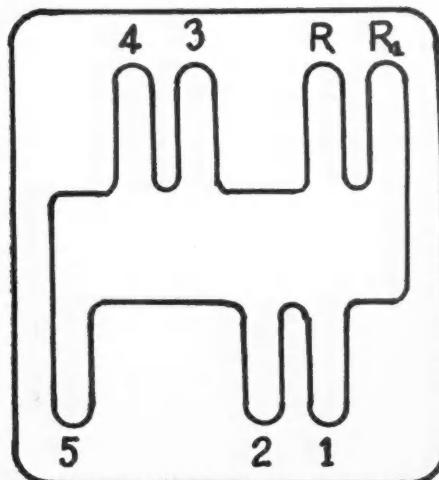
Standard equipment includes electric horn, head and stop lights; front bumper; gasoline filter; air-cleaner; gasoline gage; ammeter; oil gage; thermostat; speedometer; windshield wipers.

Side view of the improved Stewart Model 16X with closed cab. Note running board, louvers, cap and metal strip at cowl

rows. Full crowned steel fenders now are used as standard equipment on all except the 3/4-ton Buddy model. Narrow running boards with aprons have been adopted for all models. Other refinements include narrowed grooved toe and floor boards with rubber shields around pedal openings.



ONE LEVER SHIFTS SEVEN POSITIONS



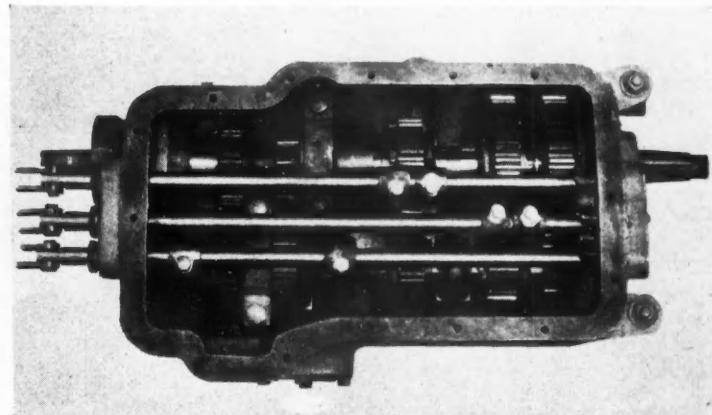
Shift positions of the five-speed transmission

A TRANSMISSION of the constant-mesh type with five forward and two reverse speeds all controlled by a single lever has been placed on the market by Cotta Gear Co., Rockford, Ill.

Two models are available, 55S for trucks of 3½ to 5-ton capacity and 65S for trucks with a capacity of 5 tons and more. Either model is made with standard drive or over-drive; the standard drive has direct fifth speed and the over-drive has direct fourth speed and an over-gearred fifth speed.

Reduction ratios for the different speeds of the two models are as follows:

Cotta Gear Transmission With Two Reverse Speeds Offered in Two Models With Either Standard Drive or Over-Drive

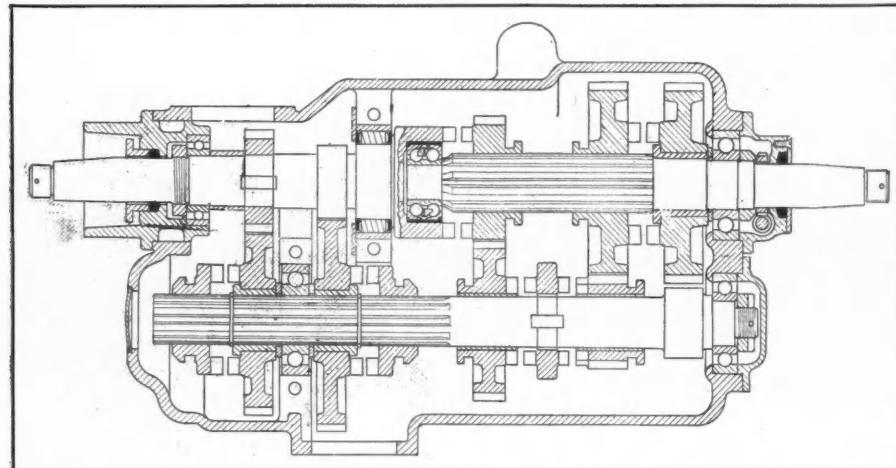


Gear Speed	Standard Drive	Over-Drive
First	8.33 to 1	8.33 to 1
Second	4.75 to 1	3.45 to 1
Third	2.80 to 1	1.75 to 1
Fourth	1.60 to 1	1.00 to 1
Fifth	1.00 to 1	.72 to 1
Low reverse	11.00 to 1	11.00 to 1
High reverse	6.30 to 1	5.40 to 1

Five speeds forward and two reverse are controlled by three shifter shafts through bell cranks in the gear shift control box

18 and the other 42 to 12. From the countershaft power is transmitted to the main shaft for forward motion through one or the other of two pairs of gears. For reverse speeds there is a pinion integral with the countershaft, near the rear bearing, which drives through an intermediate reverse idler to a gear which is free upon the main shaft but can be locked thereto by a clutch. Direct drive is obtained by engaging the clutch shaft and main shaft together by means of a positive clutch.

Engagement of gears in this transmission is accom-
(Turn to page 50, please)



Horizontal section through Cotta Gear Co. transmission. The clutch shaft extends to the left

SANFORD CUBS ARE SIXES

TWO models of a line of four, designated as the Cub Series, have been announced by the Sanford Motor Truck Co., Syracuse, N. Y. These models are S and A of $1\frac{1}{4}$ and $1\frac{3}{4}$ -ton capacities. The other two models, which will be announced later, will extend the capacity range to 3 tons. Equipped with six-cylinder engines, and mechanically operated four-wheel brakes, Models S and A are essentially identical, differing only in propeller shaft assembly, hand brake hook-up, spring sizes, rear-axle ratios and in wheelbase.

The following details apply to both models. The engine is a $2\frac{1}{8}$ x $4\frac{3}{4}$ -in., Model 31L, six-cylinder Continental, developing 44.5 hp. at 2800 r.p.m. Lubrication is force-feed by gear pump

A Capacity Range of 2500 to 6000 Lb. is Pro- vided in the New Four- Model Series

Fuel is fed by vacuum from a 14-gal. tank to a Stromberg carburetor.

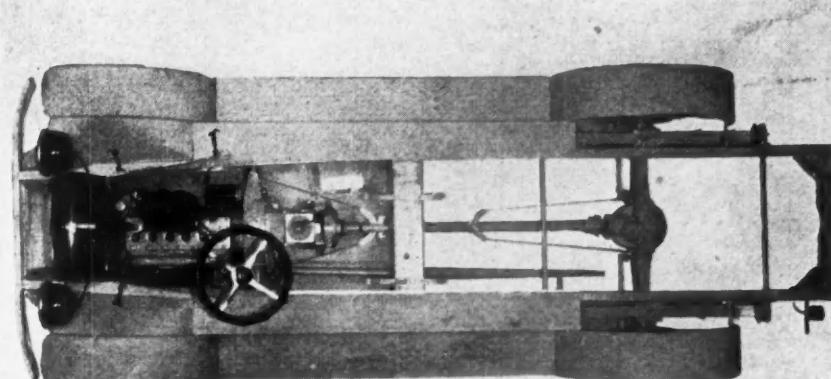
Mounted in unit with the engine is a Brown-Lipe multiple disk clutch and a three-speed Brown-Lipe transmission. Power is carried to the rear axle through a one-piece propeller shaft equipped

with two oil-tight metallic universal joints in $1\frac{1}{4}$ -ton model, while a two-piece shaft with three joints is employed in Model A. The rear axle is a bevel-drive Eaton, providing a ratio of 5% to 1 in the light model and 6 to 1 in the $1\frac{3}{4}$ -ton job. Steering is by Ross cam and lever gear.

Both models are equipped with four-wheel service brakes, Bendix with Perrot control in the front and Eaton in the rear. Linkage includes cable and single-trees and provides equalization between front and rear. Drums are 14 in. in diameter. The hand brake in Model S actuates a 9-in. band on the transmission and in Model A shoes on the rear wheels. Cast metal, hollow spoke wheels are equipped with 30 x 5 in. and 32 x 6 in. pneumatic tires on the Models S and A respectively. Wheelbase: Model S, 120 in.; Model A, 130 in. Other dimensions on Models S and A follow:

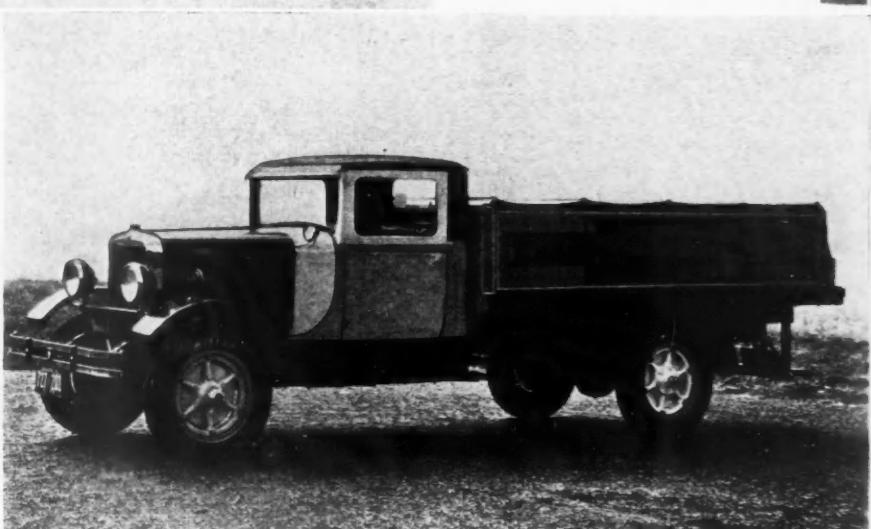
Front springs	38 x 2 in.
Rear springs (S)....	49 $\frac{1}{2}$ x 2 $\frac{1}{2}$ in.
Rear springs (A)....	50 x 2 $\frac{1}{2}$ in.
Cab to end of frame.....	78 in.
Max. body length.....	84 in.
Road clearance	9 $\frac{1}{2}$ in.

*Sanford Model N, one of
the heavier units of the Cub
series to be described later*

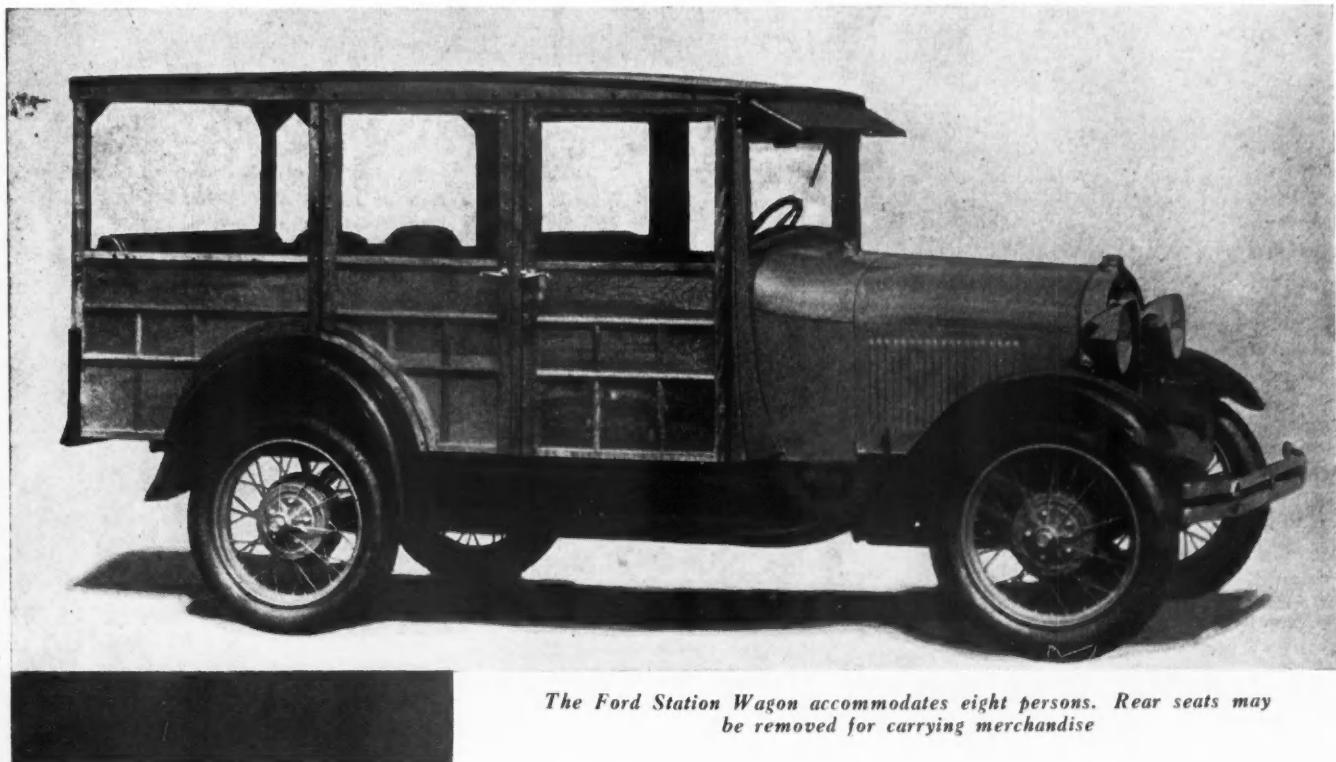


*Plan of the new $1\frac{1}{4}$ -ton
Sanford Cub showing lo-
cation of units and cable
brake-linkage*

to crankshaft, connecting rod and camshaft bearings and timing gears. Oil pressure adjustment is provided on the pump. Electrical equipment comprises Delco-Remy distributor, generator and starter. The distributor is incorporated with the generator, which is driven by a gear in the gear-case. The cooling system includes a belt-driven centrifugal pump and a Fedder radiator with honeycomb core and pressed nickel shell.



FORD TRUCK HAS



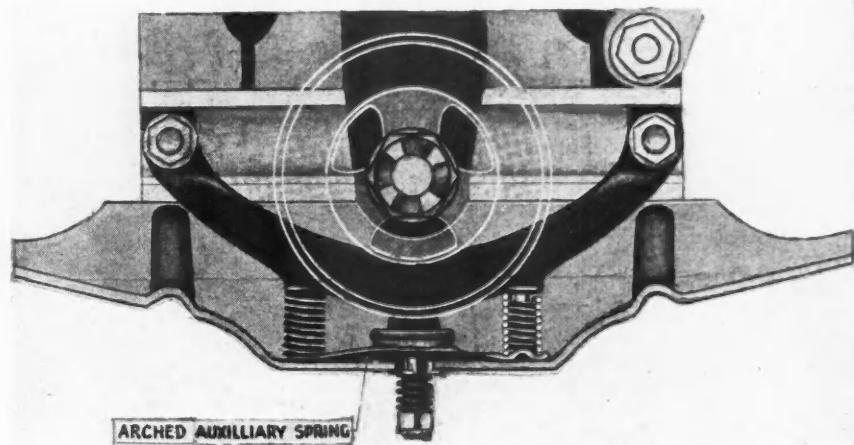
The Ford Station Wagon accommodates eight persons. Rear seats may be removed for carrying merchandise

THE Ford Motor Co. has added a de luxe delivery and a station wagon to its line of vehicles based upon the Model A chassis. Both models were shown for the first time in the company's eastern headquarters in New York City during the National Automobile Show.

The de luxe delivery strongly resembles the two-door sedan passenger car, as may be seen by reference to one of the accompanying photographs. The rear window space is blanked with metal. Access to the rear compartment is through a single rear door which is provided with one glass near the top. A metal gutter is above the door opening to prevent rain from running down the curved upper rear section of the body into the opening between door and body.

A heavy wire screen separates the carrying compartment from that for the driver and helper. There is a shelf at the forward part of the compartment, directly to the rear of the screen. Both driver's and helper's seats are of the forward tipping type.

Either passengers or merchandise, or both, may be carried in the station wagon.



Spring mounting for front end of engine. The new support is bolted to the cylinder front cover and rests upon two coil springs and an arched auxiliary spring. A coil spring below the frame cross-member controls upward motion

The seating arrangement, which accommodates eight persons, comprises a single full-width front seat, two single seats with a passageway between to a full-width seat for three. The rear seats are anchored in place but may be removed easily when desired.

Hard maple is used throughout the body of the station wagon and the wood is finished in natural grain. Doors are of the sedan type and are hung on piano hinges. Side curtains

are tan-gray with large window openings of celluloid. A steel storage compartment for the curtains is located under the floor at the rear. Spare tire is carried in a fender well on the left side. Tools are carried under the driver's seat. The tail gate is held in place by clamps and when lowered for carrying baggage or merchandise is supported by leather-covered chains. Seats are upholstered in artificial leather and rubber floor mats are provided in both the

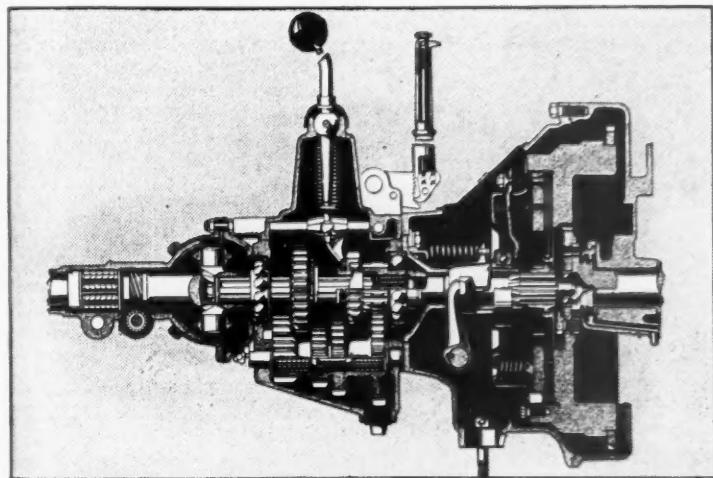
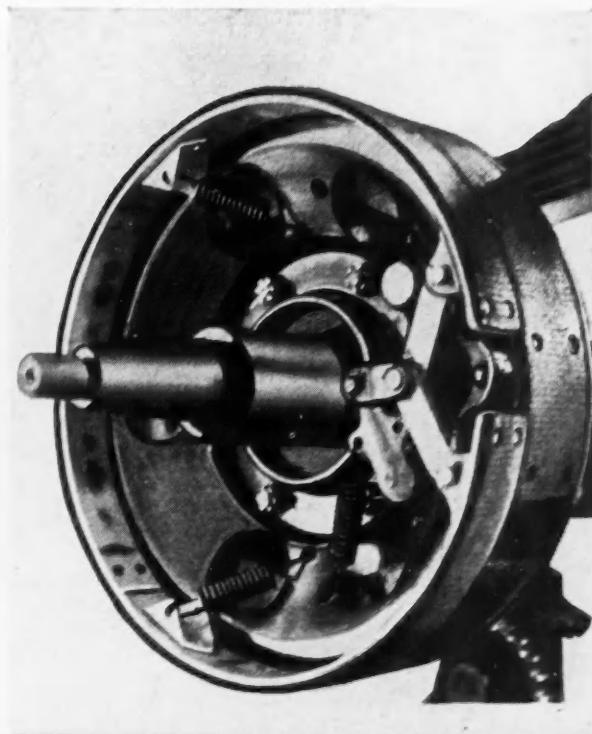
6= BRAKE SYSTEM

Brake System Similar to that Used in Passenger Chassis, but Expanding Bands of Extra Brakes Contact Same Diameter Drums. De Luxe Delivery and Station Wagon Added to Line

driver's and rear carrying compartments.

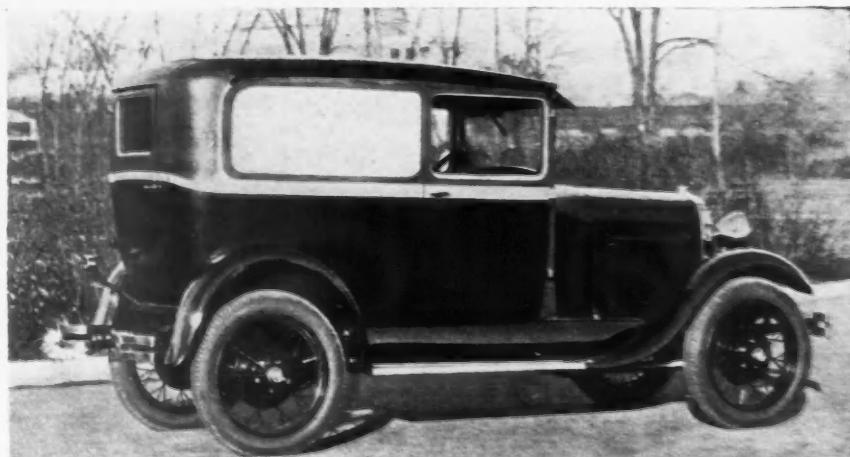
A six-brake system, similar to that recently incorporated in the passenger chassis is now used in the truck chassis. The two extra brakes are mounted beside the rear wheel internal brakes. See illustration. The brakes are operated by a lever placed ahead of the gear shift lever, as in the passenger car.

The hand brake bands are expanded by a toggle mechanism operated by a separate shaft and lever. Bands are 1½ in. wide compared with 2½ for service brake shoes



Left—Cross section showing new single plate clutch. Molded facings are riveted to both sides of the driven disk, the latter being slightly dished to provide easier engagement. Twelve springs act against a pressure plate and no adjustment of the release levers is required. The only adjustment is of clutch pedal position

The de luxe delivery Ford has blank panel in place of rear window. It has a single rear door

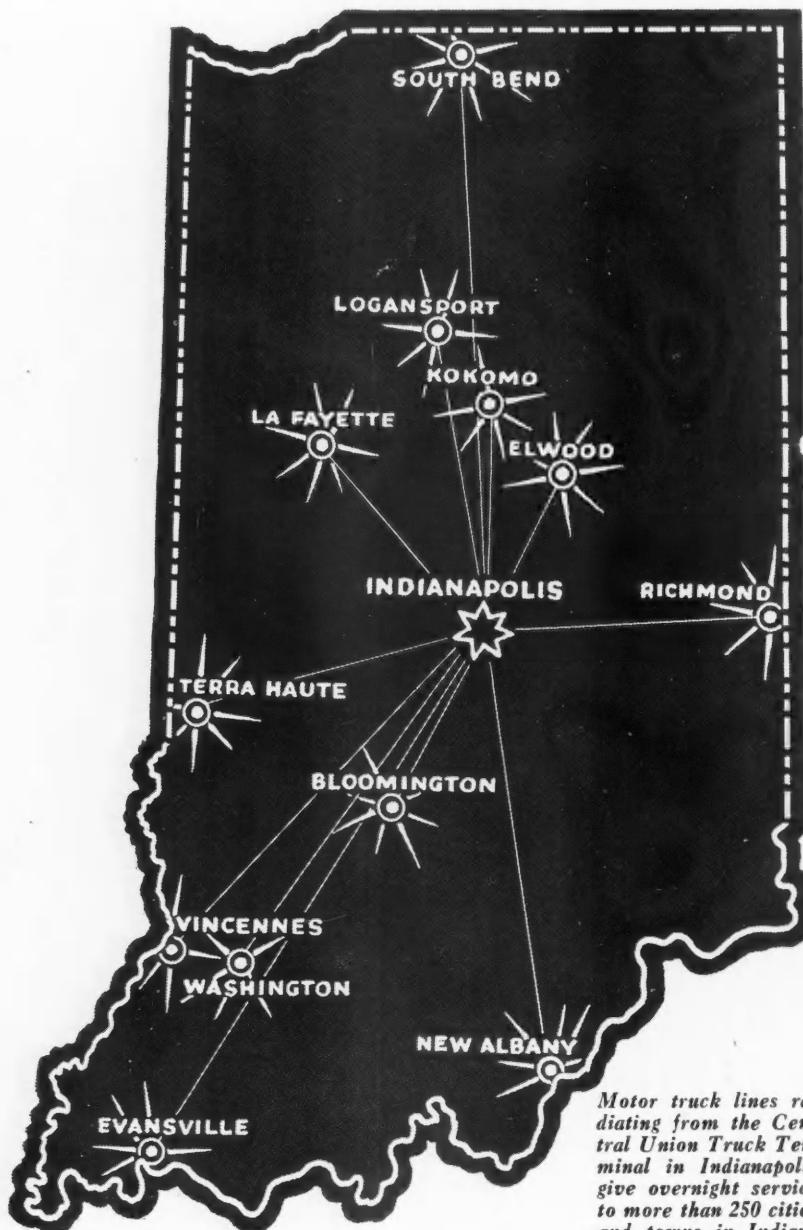


The multiple disk clutch used in the Model A chassis and truck has been replaced by a single plate design, construction of which is shown in one of the illustrations.

Another recent change in the Ford powerplant is the provision of a spring mounting for the front of the engine. This construction is designed to reduce the transmission of engine vibration to the frame. This mounting can be added to Model A engines now in use.

TRUCK TERMINAL

(Continued from page 20)



freight with other lines, to reduce operating expenses and to increase the volume of traffic handled.

Tom Snyder, secretary of the Motor Truck Association of Indiana and secretary-manager of the Truck Terminal Association of Indiana, a pioneer in Mid-West motor trucking, states this conviction as a result of his long experience in the motor freight field: "My own 10 years' experience in truck terminal operations has convinced me, and my past year's opportunity doubly confirmed my position, that truck terminals are a great and pressing influence in bringing about standards that make for dependability, responsibility, equitable rate schedules and economic operations."

With these ideas in mind Tom Snyder has organized in Indianapolis two related corporations. One is the Ware-

house Distributing Corp., of which he is president and general manager. O. R. Hesler is vice-president and secretary, and W. S. Frye is treasurer. This company operates a warehouse in the heart of the wholesale distributing district of Indianapolis. Carload shipments are received by rail from national distributors and some of the goods are distributed immediately upon arrival by motor truck to the trade territory adjacent to Indianapolis. Some of the goods are stored awaiting orders to distribute at a later time, giving the manufacturers and wholesalers the advantages of having stores of goods on hand near the markets for rapid-fire distribution when they are called for by impatient customers.

A second corporation, the Central Union Truck Terminal & Warehouse, is operated as a subsidiary of the Ware-

house Distributing Corp. The terminal is located at 415-417-419 South Pennsylvania Street, Indianapolis, in the wholesale district near the railroad freight stations and electric railway freight depots. This corporation functions as a central truck terminal through which a dozen motor truck freight lines operate, giving overnight service and store-door delivery of goods to more than 250 cities and towns in Indiana. The motor truck carriers which operate through this modern truck freight depot serve communities between Indianapolis and the cities named below as well as points within 25-mile radius from the following centers: Logansport, Vincennes, Kokomo, Washington, New Albany, Evansville, Bloomington, Elwood, Richmond, LaFayette and Terre Haute.

Motor freight lines associated with the Central Union Truck Terminal include: The Hesler Transfer Co. of Elwood; The City Transfer Co. and the Vincennes Transfer & Storage Co. of Vincennes; The Becroft Transfer & Storage Co. of Bloomington; The Killion Transit Co. of Washington; Stockton Transfer & Storage Co. of LaFayette; The Winegardner Warehouse Co. of Logansport; The Union Transfer & Storage Co. of Terre Haute; W. T. Collins & Sons Transfer & Storage Co.; Denny Motor Transfer Co., Inc., of New Albany; The Lamasco Transfer Co. of Evansville, and The Motor Distributing Corp. of Richmond.

These companies have made rapid strides in organizing and stabilizing motor transportation in the Indianapolis trade territory. Their progress and that of similar organizations in other areas represents a significant step in the progress of motor truck transportation from disorganized local trucking to the status of integrated motor truck freight service in wide geographical areas through central truck terminals, each forming a link in a strong chain of a responsible motor truck freight transportation system.

The idea is not patented by this group or by other groups elsewhere, although they have done important missionary work. Tom Snyder says: "Route operators can secure a suitable building, centralize their operations from that terminal, and gain from 10 per cent to 50 per cent by reducing individual operating costs, increasing volume on both out and in operations, and by many other advantages that invariably follow centralized and coordinated truck operations within that community."

"A group of operators can keep effective announcements of such centralization before all shippers in that city, as well as all important shippers and consignees within the operating territory that no individual operator can afford."

The organization, management and service and rate arrangements of central truck terminals in general and of the Central Union Truck Terminal in particular will be discussed in later articles of this series.

SERVICE HINTS

From Shop and Factory

Houdaille Servicing

Makers of Houdaille shock absorbers do not recommend repairs to these instruments in the field. In case of defects within one year an exchange will be made without charge by the factory. Beyond the guaranty date a nominal exchange fee is charged. Service recommendations of the factory follow:

Check glycerine level twice a year, fill to filler cap. If temperatures are below freezing add 10 to 20 per cent alcohol. Never add oil. Lubricate ball joints with grease several times a year. Check fittings for tightness twice a year. Method of adjusting absorber to vary resistance is shown by photographs.

Shortening Dump Body

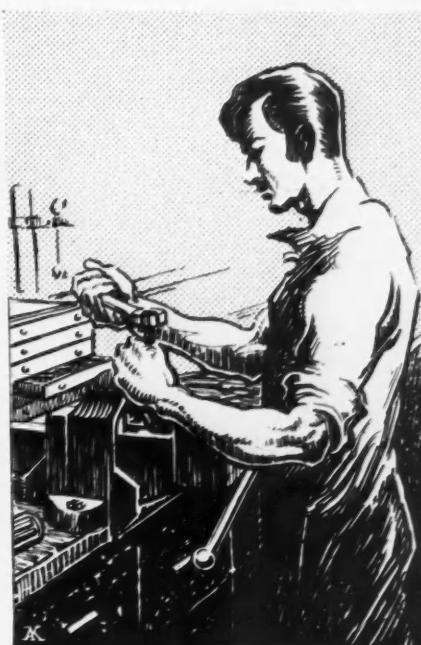
An oxy-acetylene cutting torch was used to advantage in a difficult job of cutting 2 ft. off the end of a steel dump body. The job was made necessary because of excessive overhang which caused supporting ribs at the rear of the body to break. As reported by Linde Air Products Co., the line of the cut was laid out and the cut carried down the side. About half way down a riveted reinforcement was encountered. This was removed by cutting the rivets out. Cutting was then carried down the side, through the I-beam sills. The central section, about 2 ft. wide, was removed after two cuts had been made and the tailboard end section was then welded to the body and reinforced.

Wick Oilers

During winter wick oilers work better with lighter oil than in summer. In fact, during very cold weather, cylinder oil will not feed through a wick. Makers of Myers magazine oiling system advise mixing three parts of oil with one part of kerosene for temperatures down to 15 deg. A mixture of two parts oil and one part kerosene is advised for temperatures below this point. Ice machine oil also is approved for use in Myers oilers.

Tire Repair Table

A double-decked table, shown in the illustration, saves time in a tire repair shop. The lower deck, or shelf, is used



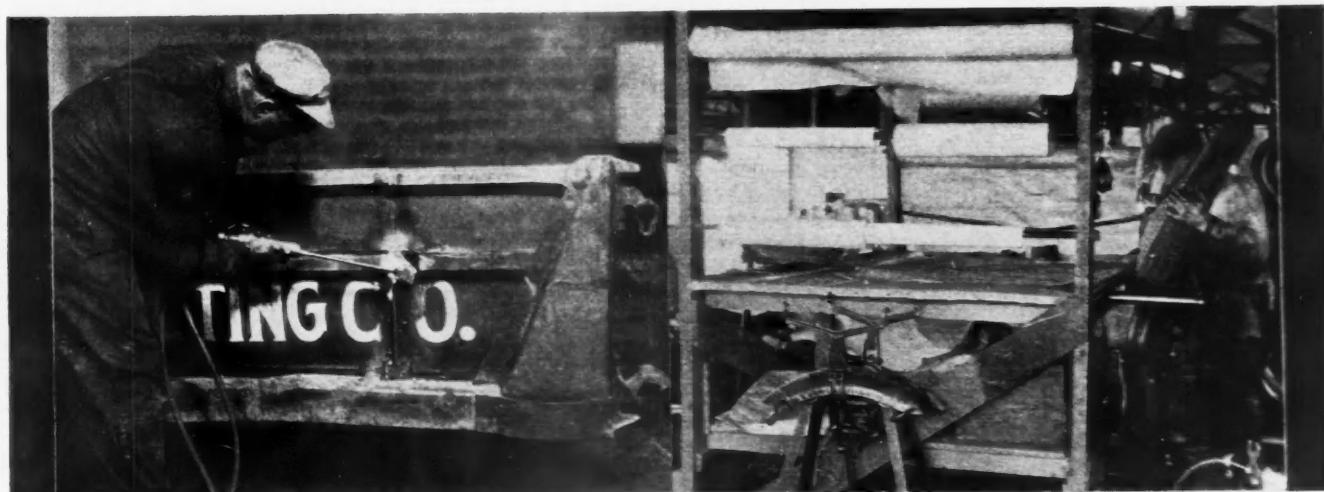
Houdaille shock absorber valve regulator. Left: Opened, least resistance. Center: To increase or decrease resistance. Right: Closed, most resistance

for storage of necessary tools, while the upper surface is covered with sheet metal and is used for repair work.

Two sections of pipe are mounted on the side of the table, as shown, and they can be slipped under the table when not in use. A hook suspended

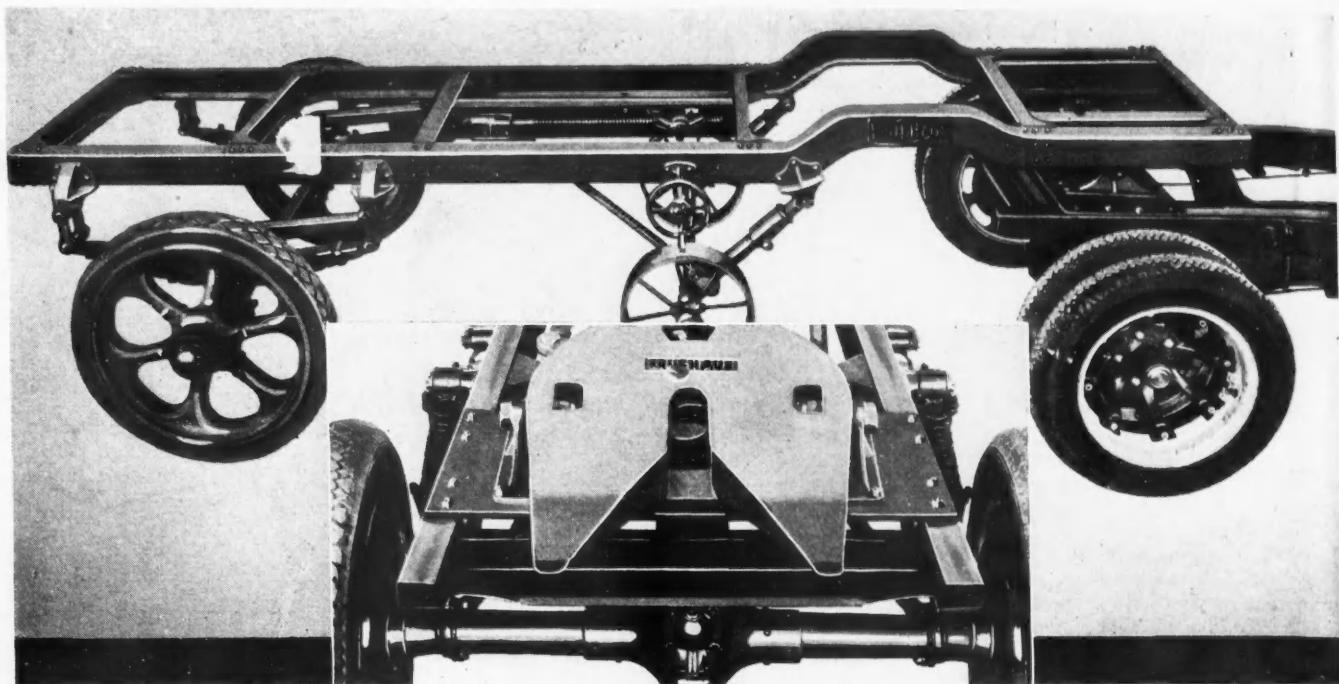
from a cord which is adjustable holds casing in place for inspection or repairs.

The 2 x 4s which form the table legs are extended 3 ft. above the table top and three rods are run through holes in the uprights to support rolls of repair stock.



Using the oxy-acetylene torch to shorten dump body

A double-deck tire repair table



Chassis of the new 3-ton Fruehauf Flyer, equipped with cast steel wheels solid tires and wheeled supports. Frame is pressed steel. The insert shows lower-half of fifth wheel. Its broad face is tipped toward the rear for easy engagement. Note locking device which functions automatically

FRUEHAUF FLYER

THE Fruehauf Trailer Co., Detroit, Mich., has brought out a light-weight, all pressed-steel frame semi-trailer designed to increase the capacity of 1-ton trucks to 3 tons. This addition to the Fruehauf line of fully automatic and standard type semi-trailers is known as the Fruehauf Flyer. The matter of quantity production has been simplified by standardization and the use of die-formed pressed-steel frames. The only changes required to suit certain purposes consist of the use of different types of tires and wheels.

Besides serving as a stabilizer the Fruehauf fifth wheel provides flexible connection between the truck and trailer and permits all six wheels to

Is Light-Weight With Pressed-Steel Frame

follow the contour of the road. The lower half of the fifth wheel is broad and tilts to the rear allowing the trailer to slide easily into position. Locking is automatic and the operation of connecting or disconnecting may be completed in 30 seconds. Substantial wheel type supports are furnished when truck and trailer are not operated as a permanently connected unit.

Specifications

Capacity	3 tons
Max. gross load with body	9000 lb.
Chassis weight, 5-in. solid tires	1760 lb.
Frame length	14 ft.
Frame width	30 in.
Frame height	39 in.
Frame section	5 in.
Frame flange	2½ in.
Frame thickness	¼ in.
Axle, drop forged	2 x 2½ in.
Tread, solid tires	56 in.
Tread, dual pneumatics	62 in.
Spindle	2½ in.
Wheels, cast steel	
Solid tires	34 x 5 in.
Single pneumatics	34 x 7 in.
Dual pneumatics (W. & K.)	32 x 6 in.
Fifth wheel	24 in.
Supports	12 in.
Price, chassis with 34 x 5-in. solid tires—no supports or fifth wheel	\$325
Supports	\$75
Fifth wheel, lower half	\$75
Rack body, 14 x 6 ft.	\$145
Brakes, Westinghouse, air	\$200
B-K, Vacuum	\$255

Shifts Seven Positions

(Continued from page 44)

plished by positive clutches of the jaw type, not by sliding gears into mesh. In each pair of gears one is fastened to a shaft by keys or splines and rotated with the shaft. The other gear is mounted on its shaft on a bushing and is in constant mesh with its corresponding gear. The positive clutch is at the side of the bushed gear and is engaged either by sliding the pair of gears on their shafts or sliding the

clutch member sidewise on the shaft.

This transmission is designed for mounting amidships and a separate control assembly goes with it. In the transmission case there are three shifter rods, one of which controls the high and low reductions, another the low reverse and first and second speeds, and the third controls the high reverse, third, fourth and fifth speeds.

The shift lever has two motions, transverse and fore-and-aft. When it is moved transversely, it engages with or drops the shifter shafts. The principal feature of this new transmission is that the shift lever connects with

two shifter shafts through bell cranks. There are two bell cranks for each of the shifter shafts and the latter are moved forward or backward according to which of the bell cranks transmits the motion. This construction provides the double motion for engaging the positive clutches for the various speeds. Whenever the shift lever is moved into one of the slots of the gate, two shifter shafts and the connecting gears or clutches are moved, except for direct drive when one shaft is moved. A reverse safety latch is provided which makes it impossible for the driver to shift into reverse by mistake.

BROWN-LIPE ADDS 3-SPEED AUXILIARY

New Transmission with .67 to 1 Over-
Drive on Third is Designed for In-
stallation on Trucks of from

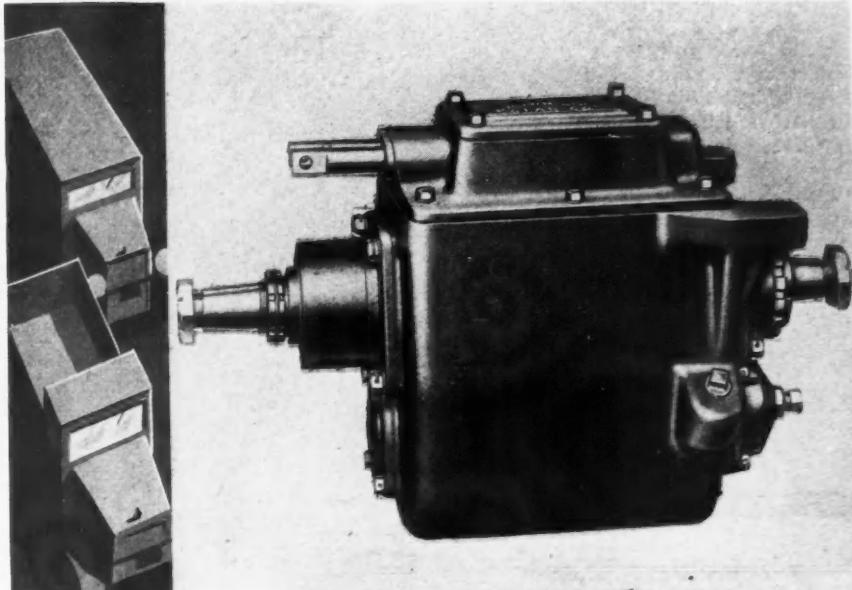
$2\frac{1}{2}$ to 6-Ton Capacity

A THREE-SPEED auxiliary transmission, with over-drive on third, designed for installation on trucks of from $2\frac{1}{2}$ to 6-ton capacity is manufactured by Brown-Lipe Gear Co., Syracuse, N. Y. This unit is designed to impart greater pulling power and a wider speed range to trucks equipped with three or four-speed transmissions, particularly those operating over bad roads and steep grades.

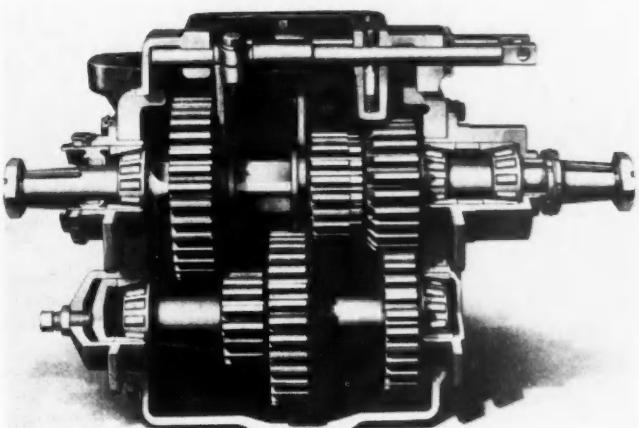
The case is of the 3-point suspension type and is mounted on cross-members attached to the main frame of the truck. Pull rods to which the shifter forks are attached are in a separate housing bolted to the top of the case. Removal of this housing gives access to the interior of the case. A pad with S.A.E. drillings for power take-off is on the right side of the case and the oil filler and level opening is on the left.

Low gear of the auxiliary transmission gives a reduction of 2.25 to 1, second is direct and third is a .67 to 1 over-drive. The various shifts of the auxiliary transmission are made by a separate lever and when a shift has been made a range has been established and the various speeds within that range are secured by operating the regular shift lever in the usual manner.

Low-low speed, forward or reverse, gives traction for starting in soft ground or on very steep grades. It



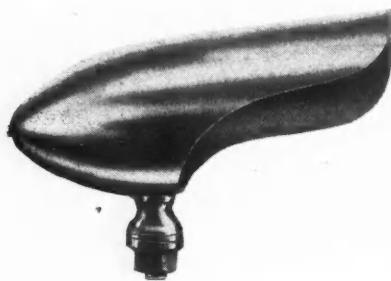
The case is mounted on two cross members being bolted to the rear member and attached to the front by means of a saddle



Left: Sectional view of interior of auxiliary transmission. All shafts are mounted on roller bearings which are adjusted from outside. The mainshaft is of square section and the countershaft is tapered

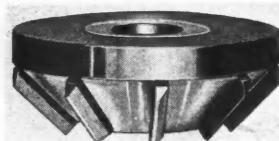
also permits very slow movement over rough spots, enabling the chassis frame to weave slowly. In direct the auxiliary transmission does not affect the regular speeds. In over-drive there is a gain of approximately 25 per cent in road speed with given engine speed, which ratio is useful when traveling light over smooth roads.

NEW PRODUCTS FOR THE TRUCK MARKET



Road Light

Attachable anywhere on a truck, the Finch Light, made by the Finch Road Light Corp., 1775 Broadway, New York City, casts a 150-ft. beam. The directing bowl or reflector is a casting 14 in. long and 9½ in. diameter and is designed so that beam will not annoy approaching drivers.

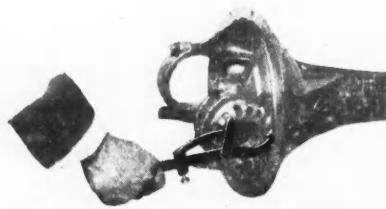


Valve Seat Reamer

Made of tungsten steel in sizes ranging from 1½ to 2½ in. by Black & Decker Mfg. Co., Towson, Md. Furnished in sets, which are also supplied with stationary expanding pilots, turning wrenches, sleeves for reamers or stones, mandrel for grinding reamers or stones, pilot removing pin and universal joint for driving stones. The reamer is turned by a hand wrench.

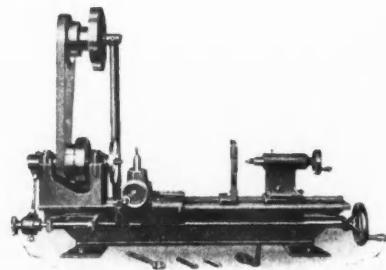
Windshield Cleaner

Designed for trucks and buses the Cinch Vertical Swipe cleans downward, over an area of 2 sq. ft. It is manually operated but returns automatically. Specifications: Squeegee, 24 in.; vertical travel, 12 in.; weight in carton, 4½ lb.; and price, \$5.50. Made by the Cinch Manufacturing Corp., 2335-2347 W. Van Buren St., Chicago.



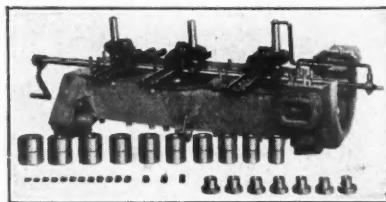
Spanner Wrench

A combination wrench for bearing adjusting sleeves and similar parts, is being marketed by the Kent-Moore Organization, Detroit. It is adjustable to three positions. Special alloy steel forgings are used in the assembly.



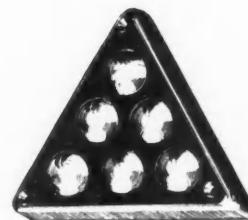
Bench Lathe

This product of Allen Electric & Equipment Co., Kalamazoo, Mich., has a 38-in. bed and swings 10 in. Furnished with countershaft and belting, face-plate, centers, lathe dog, tool kit and wrenches. The price is \$110.



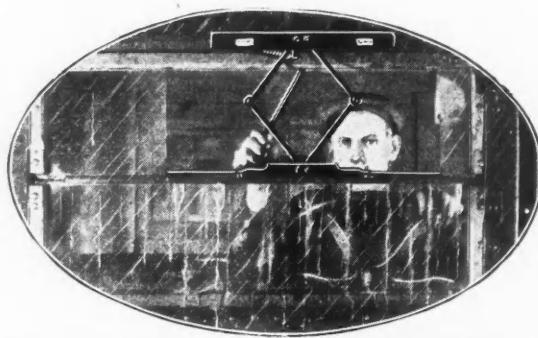
Boring Machine

This machine employs double purpose cutters and a reversible feed screw in conjunction with boring bar adjustable supporting brackets. Use of self-aligning ball-bearings is claimed to eliminate boring bar spring and assure alignment of shaft to all other related engine parts. Made by the Kent-Moore Organization, Detroit.



Marker Reflector

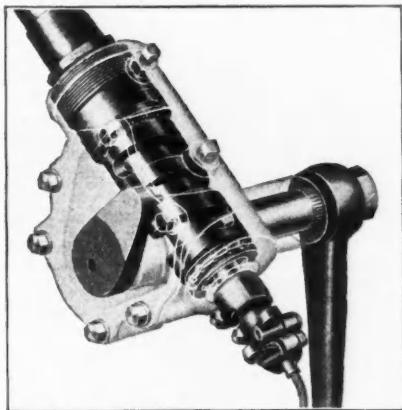
The Rayflector, made by the Atlas Mfg. Co., New Haven, Conn., consists of six reflecting units mounted in a cast-iron base. The lenses are 7/8 in. diameter and 1 in. thick, and so shaped to reflect light thrown on them at angles up to 60 deg.



Heiloy

Heiloy is the name of a new alloy developed by the Heil Company, Milwaukee, for use in the manufacture of milk truck tanks. This alloy is said to resist corrosion; brighten with use instead of tarnishing, and is not affected by chemicals present in milk products. High tensile strength also permits of the building of tanks lighter in weight than would be possible with the metal formerly used.

Replace Worn Truck and Bus Gears with ROSS



The balanced qualities of Ross Steering are largely the result of these features in which the Ross Cam and Lever Steering Gear differs from the ordinary type of steering gear:

- Variable Ratio of Cam
- Line Contact Between Actuating and Actuated Members
- Low Internal Pressures
- Powerful Internal Leverage
- High Over-All Efficiency

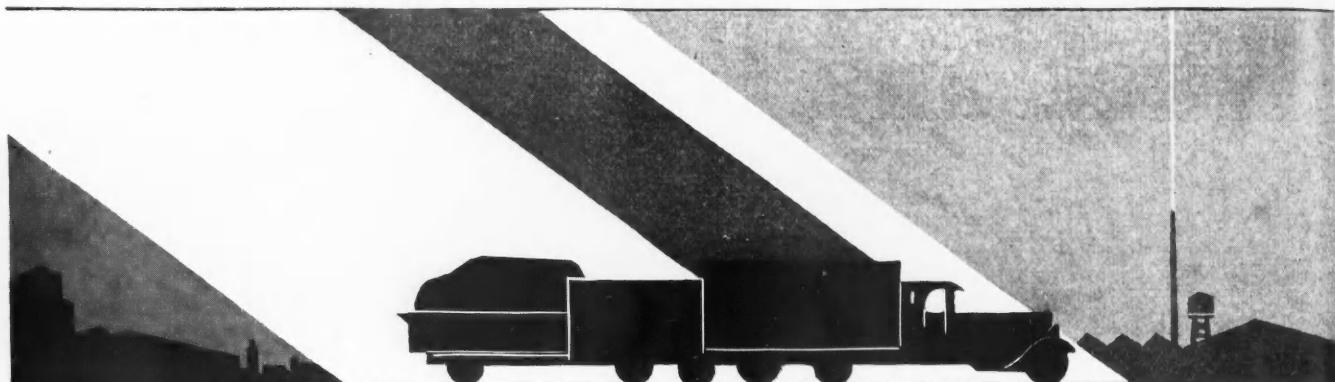
THE REASON that three out of every four bus and truck models are equipped with Ross Cam and Lever Steering is because Ross steers these hard jobs with so much greater ease and safety. And further, because of the freedom from wear which makes adjustments unnecessary over long periods of service. Maintenance costs on Ross steering are remarkably low. . . . Ross gives far easier wheel turn, facilitating greater speed and safety in city traffic. The freedom from road-shock and consequent perfect control permits safe handling under the worst of road conditions—and where there are no roads. . . . Practically all trucks and buses not originally Ross-equipped and having worn or unsatisfactory steering gears can be equipped with Ross replacement units, thus giving new steering ease and a notable reduction in service expense. Installation is not difficult—and the Ross replacement gives you a real profit with absolute satisfaction to your customer.

Write for the Ross folder illustrating truck and bus installations, and showing how to order.

ROSS GEAR & TOOL CO. · Lafayette, Indiana

ROSS Cam AND Lever STEERING

TRUCK INDUSTRY



N.A.C.C. Plans National Truck Show

Creation of a national motor truck show, which will provide for a full attendance of truck users including fleet owners, was authorized in Chicago on Jan. 30 when the board of directors of the National Automobile Chamber of Commerce held its monthly meeting. Details as to the time and place for the exhibition are to be arranged by the Motor Truck Division of the N.A.C.C. and will be announced later. The resolution specified that the show shall be held in connection with a convention where experts discuss truck subjects.

Fageol Adds 1½-Ton Model

Fageol Motors Co. of Oakland, Cal., has brought out a new model, designated as the Cub, with a capacity of 1 to 1½ tons and equipped with a four-cylinder engine, four-speed transmission and four-wheel brakes. The company is altering its plant at a cost of \$125,000 to permit it to double its production.

Hercules Gets Soviet Order

The Amtorg Trading Corp., the authorized agents for the Soviet Government, has placed an order for the delivery of several hundred engines over a period of ten months with the Hercules Motors Corp., Canton, Ohio. The contract specifies six-cylinder 4½ x 4¾ in. engines.

Equipment Group Expands

An 80 per cent membership increase since September, 1928, was reported at the recent meeting of Equipment for Motor Trucks, Inc., held at Cleveland. At the meeting a committee was appointed and authorized to work on a standard catalog which was adopted. A policy also was adopted for the

handling of national accounts between equipment manufacturers and distributors. Members voted to hold their fifth annual meeting in Detroit, Mich., beginning the third Monday in September, 1929.

Clark Working on New Transmission

Eugene B. Clark, president, Clark Equipment Co., Buchanan, Mich., heads the Clark Transmission Co., Berrien Springs, Mich., a new organization formed to produce Clark Multiple Speed Transmissions. Production was started in January in a new building equipped with the latest machinery and tooling for quantity production. Other officers: Eugene B. Clark, Jr., vice-president in charge of sales; Robert Lapsley, vice-president in charge of engineering; A. S. Bonner, secretary and treasurer; and D. A. MacIntosh, factory manager.



Thomas M. House, who succeeds the late Oliver H. Hayes in charge of the Republic Motor Truck Co. at Alma, Mich. He has been engaged in the industry since 1905

Federal Appoints Dealer Advisors

Federal Motor Truck Co. has announced the following membership for its distributor advisory committee, which has been appointed to cooperate with the management in consideration of matters of Federal policy: John Carpenter, Bridgeport, Conn.; Frank Goodpasture, Bristol, Va.; A. J. Gingrich, Grand Rapids, Mich.; George Hansuld, Vancouver, B. C.; H. W. Roberts, Portland, Ore.; R. J. Clements, Oklahoma City, and H. R. McKim, Windsor, Ont., secretary.

White Six a Light Job

The White Model 60, six-cylinder truck, described in the January issue, is a light delivery vehicle, not a 3 to 4-ton truck. The vehicle total gross weight system of rating has been adopted for this model only. Total gross weight of chassis, body and load for this model is rated at 6000 lb. on 30 x 5 in. tires and 8000 on 32 x 6 in. tires. In the article these figures were given as carrying capacities.

Timken Absorbs Wisconsin

Stockholders of the Wisconsin Parts Co. have approved the consolidation of that company with the Timken-Detroit Axle Co. recently recommended by the Wisconsin directorate. No change in the personnel of the Wisconsin company will be made. Willard Rockwell, president of the Wisconsin, becomes a director on the Timken board.

War Department Needs Trucks

The War Department plans to spend \$500,000 for the purchase of new trucks to replace old models during the next fiscal year, Secretary of War Davis told the House appropriations committee during hearings on the War Department supply bill.



1 Ton
6 cylinder
4 wheel Brakes
\$995
Chassis

The 1929 STEWARTS

...acknowledge no
peer in all truckdom

MORE powerful, more rugged, more attractive in appearance, offering bigger value per dollar than ever before . . . the greatest Stewart of them all is here!

For 15 years Stewarts have built up a reputation as quality trucks moderately priced. Today the 1929 Stewarts are being hailed as the outstanding truck value of the age.

The new Stewarts have all the latest known worth-while mechanical improvements, plus the time-tested and proven Stewart features.

Stewart owners do not figure depreciation on a 2 or 3 year basis. They know by experience that the average life of a Stewart is 5 years or more. Many Stewarts have given their owners 8, 10, and 12 years of constant service.

Another Sales Increase

1926 sales 41% ahead of 1925 . . . 1927, 45.7% over 1926 and in 1928 an increase of 53% over 1927. That's the story of Stewart success in figures. Factory facilities have been enlarged to care for a greater production and more dealers. Write or wire for details of Stewart's liberal franchise.

STEWART MOTOR CORPORATION
BUFFALO, N. Y.

Export Branch: 1 BROADWAY (Dept. 3) NEW YORK CITY
Cable Address, Stewartruk New York, Codes Bentley & Acme

Models	
3/4 Ton	
6 Cylinder . . .	\$895 Chassis
1 Ton	
6 Cylinder . . .	\$995 Chassis
1 1/4 Ton	
4 or 6 Cylinder . .	\$1295 Chassis
1 1/2 Ton	
4 or 6 Cylinder . .	\$1645 Chassis
2 Ton	
4 or 6 Cylinder . .	\$1975 Chassis
Worm Axle . .	\$2095 Chassis
2 1/2 Ton	
6 Cylinder . . .	\$2690 Chassis
3 Ton	
6 Cylinder . . .	\$3490 Chassis
4 Ton	
6 Cylinder . . .	\$4200 Chassis

All prices f.o.b. Buffalo

Stewart
MOTOR TRUCKS

2 1/2 Ton
6 cylinder
4 wheel Brakes
\$2690
chassis



Stewart Trucks have won—By costing less to run

War Department Needs Trucks for Infantry

Purchase of three types of trucks will be necessary to complete the motorization of the Thirty-fourth Infantry, Fort Eustis, Va., in accordance with plans of the War Department, officially announced in Washington. Motorization must be completed by June 30, 1929, under orders of the department, and in order to meet requirements, the department will be compelled to purchase $\frac{3}{4}$ -ton trucks of a four-wheel type with two-wheel drive, six-wheel type with four-wheel drive, and $1\frac{1}{2}$ -ton trucks with four-wheel drive.

Spicer Reelected

J. T. Spicer was reelected president of the Asbestos Brake Lining Association at its annual meeting in New York. Associated with him during the coming year will be: H. W. Kelsey, Russel Mfg. Co., first vice-president; William Brookes, Ferodo & Asbestos Co., second vice-president.

Goodyear Promotes Mayl

J. E. Mayl has been appointed manager of the Southern division of the Goodyear Tire & Rubber Co., succeeding C. W. Martin, Jr., who has been granted a leave of absence. E. R. Preston succeeds Mr. Mayl as manager of truck tire sales.

Record for G. M. Truck

The General Motors Truck Corp. during 1928 has increased its domestic truck sales \$9,500,000 and its dealer organization 163 per cent over 1927, according to Paul W. Seiler, president.

Lempco Expands Plant

The Lake Erie Metal Products Co., Bedford, Ohio, maker of Lempco axles, worms and drums, is building a \$100,000 addition to its factory which will increase the floor space of the present building 33 per cent.

Borg-Warner-Coulter Merger

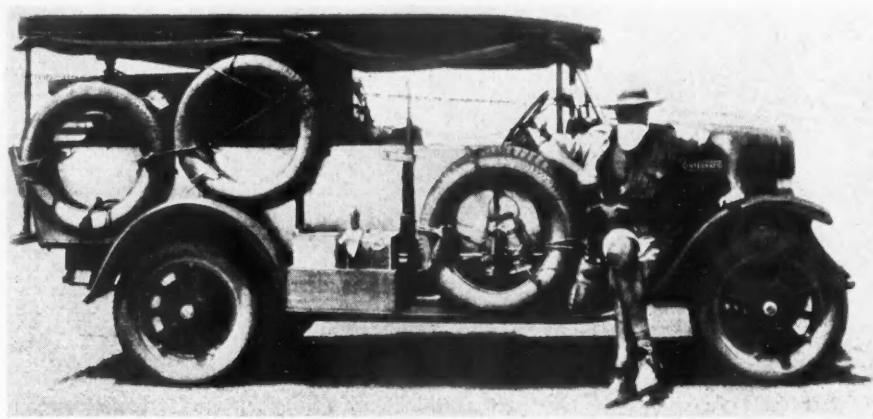
The proposed consolidation of the Borg-Warner Corp. and the Galesburg-Coulter Disc Co. was declared effective Jan. 11 at a meeting of stockholders. The transaction provided for an equal exchange of shares.

Weed Pyrene President

E. G. Weed is now vice-president of the Pyrene Manufacturing Co., Newark, N. J. C. M. Bunnell has been appointed general sales manager and J. P. Maloney assistant general sales manager.

Bendix Forms Service Chain

Bendix Corp. announced the formation of the Bendix Service Corp., organized to be a wholesale and retail outlet except where the manufacturers of automobiles distribute to their own dealers for service work. It is the intention of the company to build a chain of super-service stations in the larger



This stock model Special Delivery International Harvester truck, exhibited at the Philadelphia Automobile Show, completed 3800 miles through equatorial Africa in 19 driving days and 2818 miles across the Sahara in 16 driving days. The truck showed no ill effects as a result of its unusual and trying ordeals.

cities throughout the country which will service surrounding territories and license service stations in smaller cities. Vincent Bendix, W. C. Buettner, Forbes Marshall and David Beecroft will be members of the board.

Western Electric to Use Reos

The Western Electric Co. has completed a contract with the Reo Motor Car Co., covering a period of two years for Speed Wagons to be used for Movietone News Reels and "location" sound picture recording units. Special bodies to fit the chassis are being built at the plant by the Highway Trailer Company, Stoughton, Wis. The Western Electric program calls for the marketing of these Studios on Wheels for the production of news reels combining sound with sight.

Stillman With North East

Harry M. Stillman has been appointed by the North East Electric Co. to represent its interests in the Detroit territory. His headquarters will be at 4473 Cass Ave.

Hinkley Joins Buda

C. C. Hinkley has been appointed executive engineer of the Buda Co., succeeding J. P. Mahoney, resigned.

Coming Events SHOWS

Albany, N. Y.—State Armory....Mar. 19-26
Des Moines—United States Good Roads
AssociationMay 28-June 1
Harrisburg, Pa.—Shaffer Bldg....Feb. 2-9
Mankato, Minn.—Mankato Armory,
Feb. 13-16
Minneapolis and St. Paul—State Fair
GroundsFeb. 2-9
Omaha, Neb.—City Auditorium..Feb. 18-23
Providence, R. I.—Cranston St. Armory,
Feb. 16-23
Quebec, Can.—Drill House.....Mar. 16-23

CONVENTIONS

Des Moines—United States Good Roads
Assn. and Bankhead National
Highway Assn.May 28-June 1

Dana Named President of Brown-Lipe Gear

Following its purchase of the Brown-Lipe Gear Co., Syracuse, Spicer Mfg. Co. has announced that it will hereafter cooperate in the management and production of the Brown-Lipe Company, and that the plant and general offices will continue in Syracuse. The company will be headed by C. A. Dana as president with C. M. Kaltwasser, vice-president and general manager; J. O. Pierce, vice-president, and J. V. Melick, treasurer. The plant personnel will continue as formerly.

Expanded Facilities Predicted

In its annual forecast of building construction in this country for 1929 the Architectural Forum has placed \$145,580,680 as the value of such projects in the automotive industry, with the total value of all new building construction, under architectural supervision, as \$5,116,773,200.

Morton Succeeds Stettinius

Allen W. Morton succeeds W. C. Stettinius as president and general manager of the American Hammered Piston Ring Co. Mr. Stettinius resigned on Dec. 31, but will continue with the company as vice-chairman of the board.

Selden Six Dump Truck

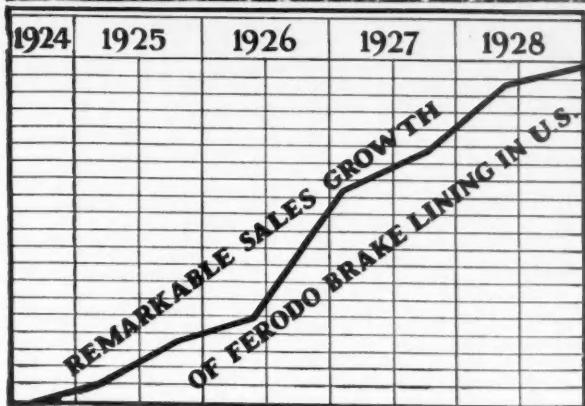
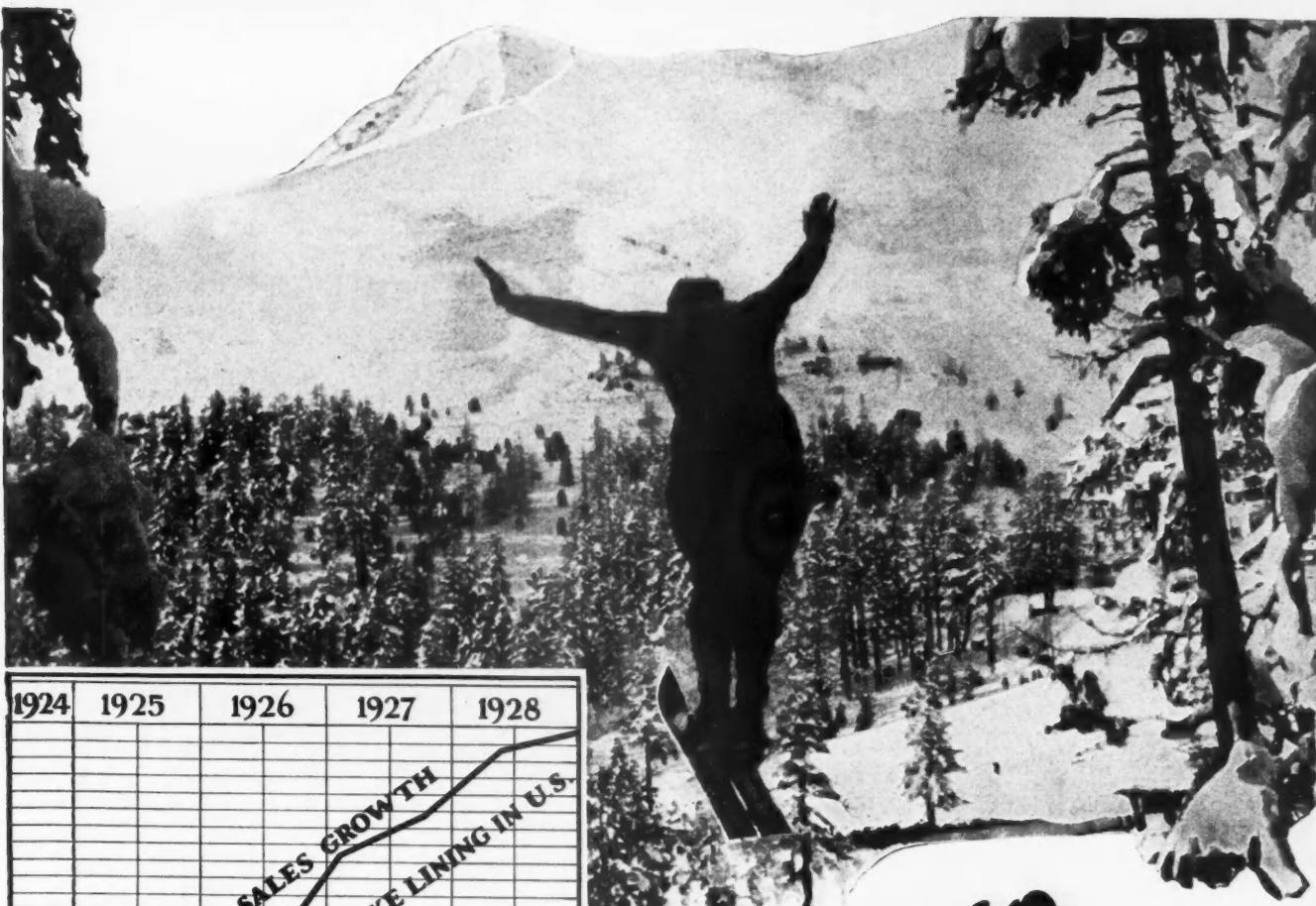
Two new valve-in-head six-cylinder dump trucks have been announced by the Selden Truck Corp. They are designated as Models 47X and 37X and are of two and four-ton capacities.

Haynes Durant President

Frederick J. Haynes has been elected president of Durant Motors, Inc., succeeding W. C. Durant. Mr. Haynes was formerly president and chairman of the board of Dodge Brothers, Inc.

Federal Builds Addition

Federal Motor Truck Co. has broken ground for an addition to its factory. The building will be 400 ft. long and add 57,600 sq. ft. to the company's facilities.



Up-Up-Up
to new records
Ferodo must be better

Up and up climb the records of Ferodo sales, as shown by the chart above.

There must be some reason for this constant, this surprising growth. It can't be price—for Ferodo lists at 30% more a foot than ordinary brake linings. It *must* be the Lining itself. Read over the ten counts of superiority . . . then reline one set of brakes with Ferodo as a test and let it prove to you what thousands have already learned—Ferodo Brake Lining *is* better.

FERODO AND ASBESTOS

Incorporated

New Brunswick, New Jersey

FERODO
REGISTERED
BRAKE LINING

*Photo: Kadel & Herbert

E-2-29

FLEET USERS EXPOUND VIEWS ON ALLOWANCES

THE opinions of a number of fleet operators in regard to excess allowances on old trucks traded in on the purchase of new equipment were elicited by Paul W. Seiler, president and general manager of the General Motors Truck Corp., in response to a communication which he sent out to fleet owners setting forth the new no excess trade-in allowance policy of his company. The following are excerpts from some of the letters sent by fleet users:

"Any successful business man realizes full well," said M. G. Eitelman, vice-president of the Barnsdale Refining Co., Kansas City, "that where an allowance is made on a trade-in of any commodity at a value in excess of an amount beyond a resale value of that second-hand commodity to be purchased the practice is not only unsound, but very unethical. Only one of two conclusions can be drawn: that the seller of the new commodity has his list price entirely too high, which permits him a margin of profit between cost and selling price in an amount sufficient to make an undue allowance on the old equipment; or, secondly, he represents an unbusinesslike institution, and in the petroleum industry we would class him as a 'bootlegger.'"

The view taken by one of the country's foremost mail order houses is well expressed by A. R. McConnell, general purchasing agent of Sears, Roebuck & Co., who writes: "Certainly, there can be little argument that the policy of pricing up a new truck to allow unwarranted trade-in values on old trucks is unsound and works ultimately to the disadvantage of the buyer. We, as relatively large users of trucks, at least being large enough that we have our own maintenance crew and, consequently, large enough that we know something about the inherent value of a truck, do not lose by reason of the prevailing situation, because we feel we know enough about trucks not to be deceived as to the true value we are buying. However, the buyer who does not have these facilities, and who consequently buys largely on price, is the loser, and looked at in the broad way, the truck industry should so organize itself as to protect him. If this step can be accomplished it will, in my opinion, be a decided step forward."

W. A. Fader, general superintendent, Smith Truck Co., Detroit, wrote: "In my opinion, the elimination of excess



trade-in allowances is economically sound, providing it can be carried out 100 per cent to all. I do not believe this practice will lose any truck sales excepting those that would be more or less undesirable, because I am sure that every successful operator of trucks will see the benefits of buying trucks at a price in keeping with their value in economical miles of service, which in reality is, or should be, his first thought when purchasing a truck."

The opinion of a manufacturer is contained in a letter from N. E. Shockley, assistant general manager, L. A. Young Spring & Wire Corp., Detroit. "I contend if a truck is built to give proper length of service at the lowest possible upkeep cost that trade allowance would not enter into consideration on the repurchase of trucks. I am sure that if you had a truck that gave such service you could well afford to forget the trade-in value. We could not afford to be prejudiced against any company doing business in this manner as we are buying and not selling trucks."

"The practice of truck and automobile manufacturers of pricing their product at a fictitious figure, solely for the purpose of enabling them to offer a prospective buyer an absurdly long trade for any piece of junk he happens to possess, is unsound," in the opinion of L. W. Childress, president, Columbia Terminals Co., St. Louis. "The practice appears to me to be not only unsound, but measured by the standards that generally prevail in business it is unethical and unfair, if not dishonest, because it inevitably leads to buyers paying varying prices for the same article."

When a truck agency offers us a liberal trade-in allowance I am suspicious of the company," said T. F. Crowley, Jr., of the Union Laundry

Co., Newark, N. J. "It is most essential in any business running a delivery department to put the best you possibly can into the truck, at the same time keeping the initial cost down."

L. L. Oppenheimer, vice-president, Interstate Public Service Co., Indianapolis, said: "In the purchase of trucks, I would rather deal with a company whose product I know is all right, and who will quote the very lowest price, consistent with the value of the unit, and allow in exchange for old equipment its honest trade-in value."

F. P. Summers, purchasing agent, Standard Oil Co. of California: "Our Motor Vehicle Department is familiar with appraisals and the condition of the equipment. We never encourage an excess allowance on old vehicles in any of our negotiations."

"Looking at one aspect of the proposition, excessive resale allowances when granted are simply a form of price cutting, and the average individual who knows anything about production distribution certainly realizes that any form of price cutting is generally adequately protected in the original mark-up," in the opinion of S. U. Hooper, vice-president, Hartman Furniture & Carpet Co., Chicago. "I have, therefore, no hesitation in agreeing thoroughly that the 'excess allowance' is economically unsound and that its elimination from the industry will be beneficial to both the manufacturer and the consumer."

F. A. Pielsticker, vice-president, Skelly Oil Co., El Dorado, Kansas, says: "I would say that as a purchaser and user of trucks we would prefer to pay a reasonably sound price for new equipment, and should we have anything of value to trade in, receive in return a fair and honest allowance on our old equipment. Unsound and fictitiously high advertised prices both on old and new equipment cannot possibly be in harmony with good business practice and must be a detriment to the industry that practices them, and we doubt that anything that is a detriment to your industry can possibly be a benefit to ours. We would prefer honest prices both ways."

C. R. Bowl, purchasing department, Swift & Co., Chicago, says: "We do not want to do business with a company that cannot make a profit on its transactions, as we could not exist by selling our product without a profit. It is our policy to live and let live."



And the 2 Colemans finished alone

Four trucks started the job—two high priced, two-wheel-drive trucks and two Colemans. It was an ordinary excavation job, just outside the city of Philadelphia. A short haul from the shovel to the dump—soft, wet ground, but no very steep grades. Here's what happened!

The first two-wheel-drive couldn't get in to the shovel at all the first day. On the second day, it finally got to the shovel in the Coleman's tracks and broke its chain at 10 A. M.

The second two-wheel-drive truck started in great—made two round trips the first day and burned out its clutch—retiring "gracefully."

During this time the two Colemans were making a round trip every 11 minutes! And they finished the job alone! But it took 10 days instead of five because there were no more Colemans available!

The opportunities for Coleman sales in every territory are remarkable! In practically every location, Coleman Four-Wheel-Drive Trucks are performing the impossible and in between times carrying out their routine duties more efficiently and more economically than any other truck on the market.

Progressive dealers are invited to write for the Coleman Dealer Plan. The Coleman Four-Wheel-Drive should be added to your present line!

Available in All Sizes

COLEMAN MOTORS CORPORATION

Main Plant
Littleton, Colorado

Branch
Chicago, Illinois

Eastern Plant
Washington, D. C.

COLEMAN

FOUR WHEEL DRIVE

KEEP DRIVERS SOLD

(Continued from page 27)

come to us with prospects, they boost the truck and otherwise aid us, and they in turn realize that we do everything possible to aid them. We never lose an opportunity to boost a good driver to his employer, but we are just as careful in not commanding the work of a poor one."

"Customers' drivers are kept sold on our trucks by constant contact," says C. C. Morgan, manager, Mack International Motor Truck Corp. branch in Milwaukee. "Drivers do not like to be 'high-hatted' by a truck salesman. They like to feel that he is a friend of theirs. The driver can make or break a truck for the salesman and it is to the latter's advantage to keep friends with them. We do not run an actual employment bureau for drivers, but we do get jobs for drivers. Our salesmen are in touch with the truck transportation situation in the field they cover, and they always know of jobs to be had."

L. D. Hemmon, G.M.C. distributor, Phoenix, Ariz.: "My love for a good driver is the only real affection I have for the human race. I say 'hello Bill' to everyone I see, and then I listen if they want to talk. I like to have them come into the office. I'm always looking out for one that I can back to the limit in my own special type of demonstration and guarantee. I don't palaver much with them and I don't go around handing them cigars, but I get them some good regular jobs and they get me a lot of business. After all, that's the basis of all the good-will in business that amounts to a damn. I don't have to be told to smile when a truck driver comes in, and I don't have to be careful not to smile at him if I feel like it. They're human and I'm half, and they're very necessary to me in my business."

Annual get-together dinner-clinics of truck drivers and traffic superintendents held in the company's plant is the method of contacting drivers employed by W. P. Bates, branch manager, Reo Motor Car Co., San Antonio, Tex. In arranging these dinners Mr. Bates secures the interest and cooperation of heads of concerns using trucks, obtaining from them the names and addresses of drivers, superintendents and executives. Each of these receive an invitation and program by mail. At the dinner the men are lectured on pertinent topics such as traffic laws, state and city ordinance governing the operation of commercial cars, lubrication, tires, maintenance, etc. Mr. Bates claims that these dinners result in acquaintances that serve to break down sales resistance and pave the way to executives responsible for the purchase of trucks. The dinners are followed up by direct mail and personal calls.

C. E. Anderson, sales manager, Gen-

eral Motors Truck Co., Birmingham, Ala.: "This organization takes pains to cultivate the drivers and keep them sold on our product. The salesman, the sales manager and the service manager cultivate the drivers by aiding them in their work when they are independents and helping them secure new jobs when they are employees and are out of work."

An informal employment service for loyal truck drivers is maintained by the Foss-Hughes Co., Pierce-Arrow, Providence, R. I., for the benefit of drivers. Steady employment is a matter

known that its representatives will give him preferred service and will work a crew all night, to get out the job."

R. E. Davis, general manager, O'Brien-Davis Auto Co., Omaha, Neb.: "We require that the driver of a truck just sold be turned over to us for a short course in truck operation. We insist that this period of training in our shop shall not be less than two hours, and we keep him as much longer than that as possible. If he practices in driving and servicing what we instruct him to do the driver has gained an intimate knowledge that causes him to like our truck better than any other."

S. A. Stephen, Dodge Brothers dealer, Buffalo, N. Y.: "Some time ago we invited about 200 drivers to a service talk, feed and entertainment. About 45 appeared. It was not a success and we do not intend to repeat it. We found that some fleet owners frowned on the idea, thinking we were taking unfair means to bias drivers in our behalf. Instead we now have a service meeting every two months, usually having a man present from the factory. Great interest is taken in these meetings.

A few of the truck dealer executives are of the opinion that the driver does not exercise a great influence in truck sales and that more attention should be given to other phases of truck merchandising.

Paul G. Clark, Chevrolet dealer, Colorado Springs, Colo.: "We make a point of treating customers' drivers as though they were the owners of the trucks, and when they come in we see that they get the best possible service. Aside from that we make no effort, feeling that while the driver is important, the owner is more, so since it is he who is most interested in costs, performance, etc."

R. W. Leach, vice-president, Curtis Auto Co., Reo dealer, Milwaukee: "We do not use any particular means to keep the drivers sold on the trucks." Mr. Leach said that many of the men who drive Reo trucks own the trucks themselves. He said there is too great a turn-over among truck drivers for them to have much influence.

Ralph J. Rieman, manager, Kam-Rieman Co., Inc., G.M.C. dealer, Buffalo, N. Y.: "We have no organized plan, but always treat drivers with courtesy and consideration. We ask drivers for names of prospects. That really helps and also makes the drivers feel that we consider them of some importance, which we do. Still, in more than half of the instances we do not feel that drivers have much weight with owners in truck buying."

Frank B. Smith of the Smith Chevrolet Co., Youngstown, Ohio, stresses keeping in touch more with the purchasing department than contacting with drivers. "Drivers have little to do with deciding what make of equipment shall be purchased. Of course, this is not to be taken that the driver is not shown every courtesy and given every assistance in the servicing of his truck. Quite the contrary."

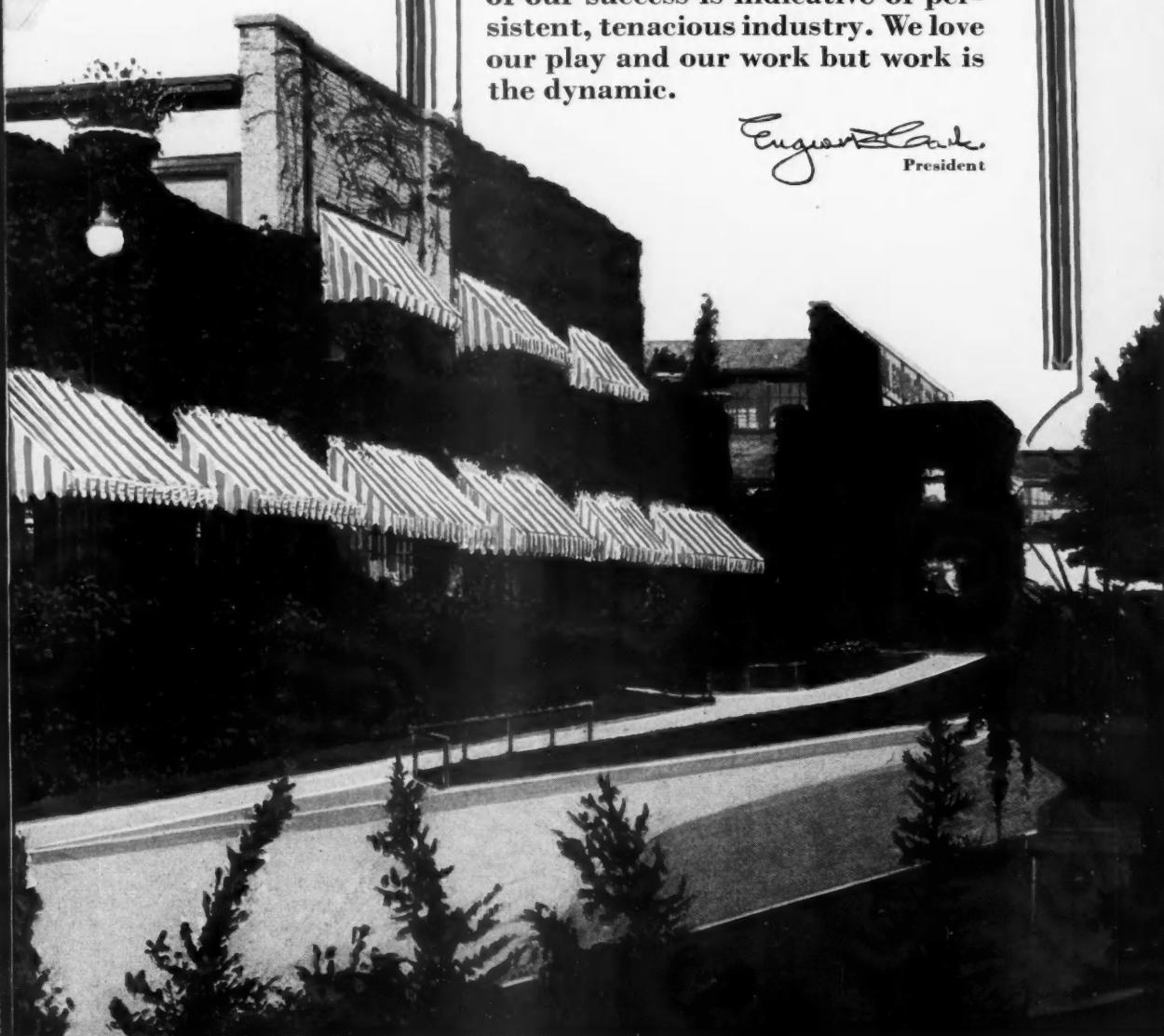
• • • **The strength**
of an organization is the sum of
the strength of the men who make
up that organization.

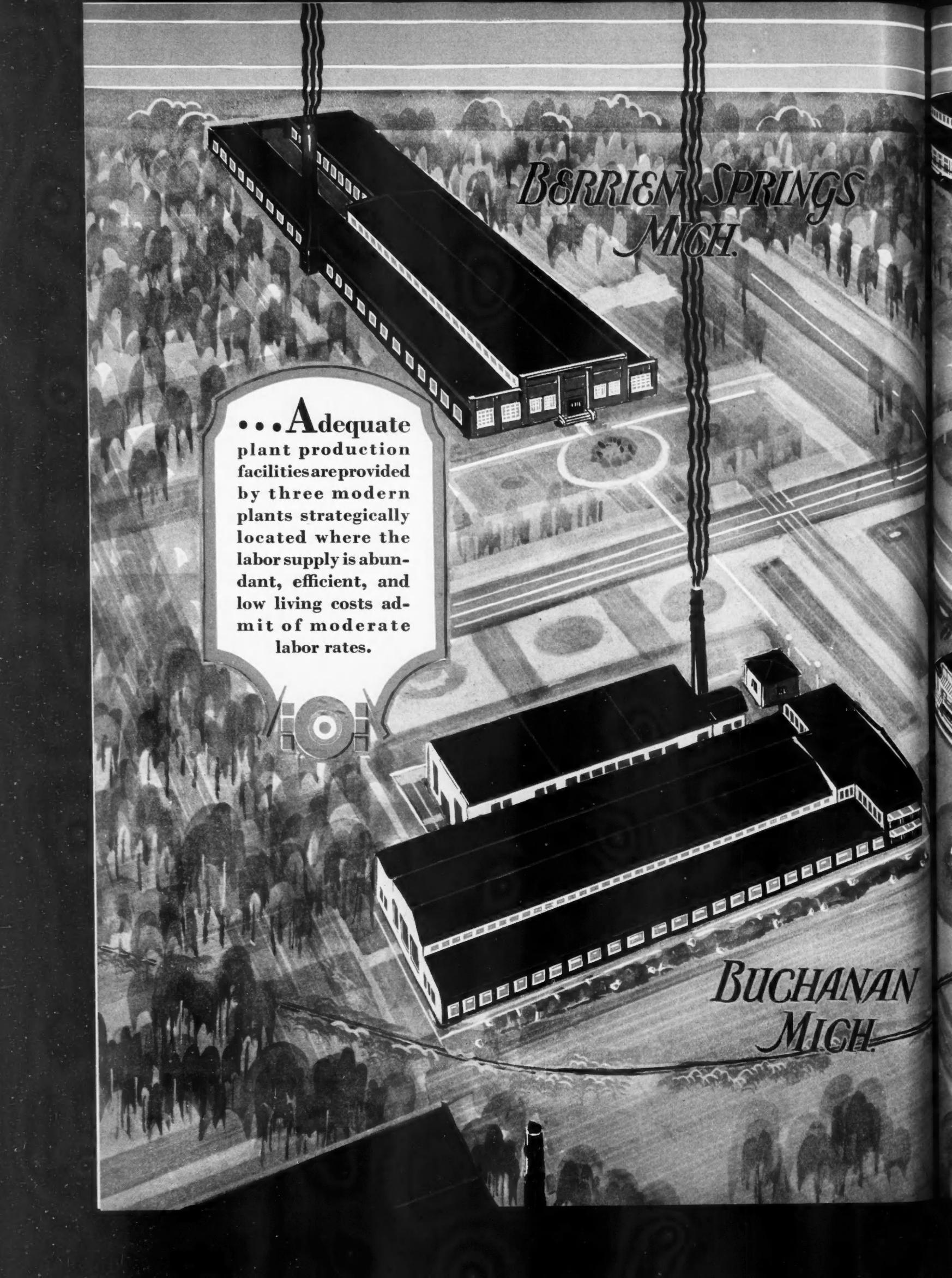
The Clark Equipment Company
is fortunate in drawing to its serv-
ice men of strong personalities, the
product of whose minds and hands
have served the automotive indus-
try—greatly!

As president of this company I
take no credit—save that I have
been chosen to guide and direct
the energies of men who love to
lead in achievement. There can
be no worthy success without
tremendous work and the measure
of our success is indicative of per-
sistent, tenacious industry. We love
our play and our work but work is
the dynamic.

Eugene Clark
President

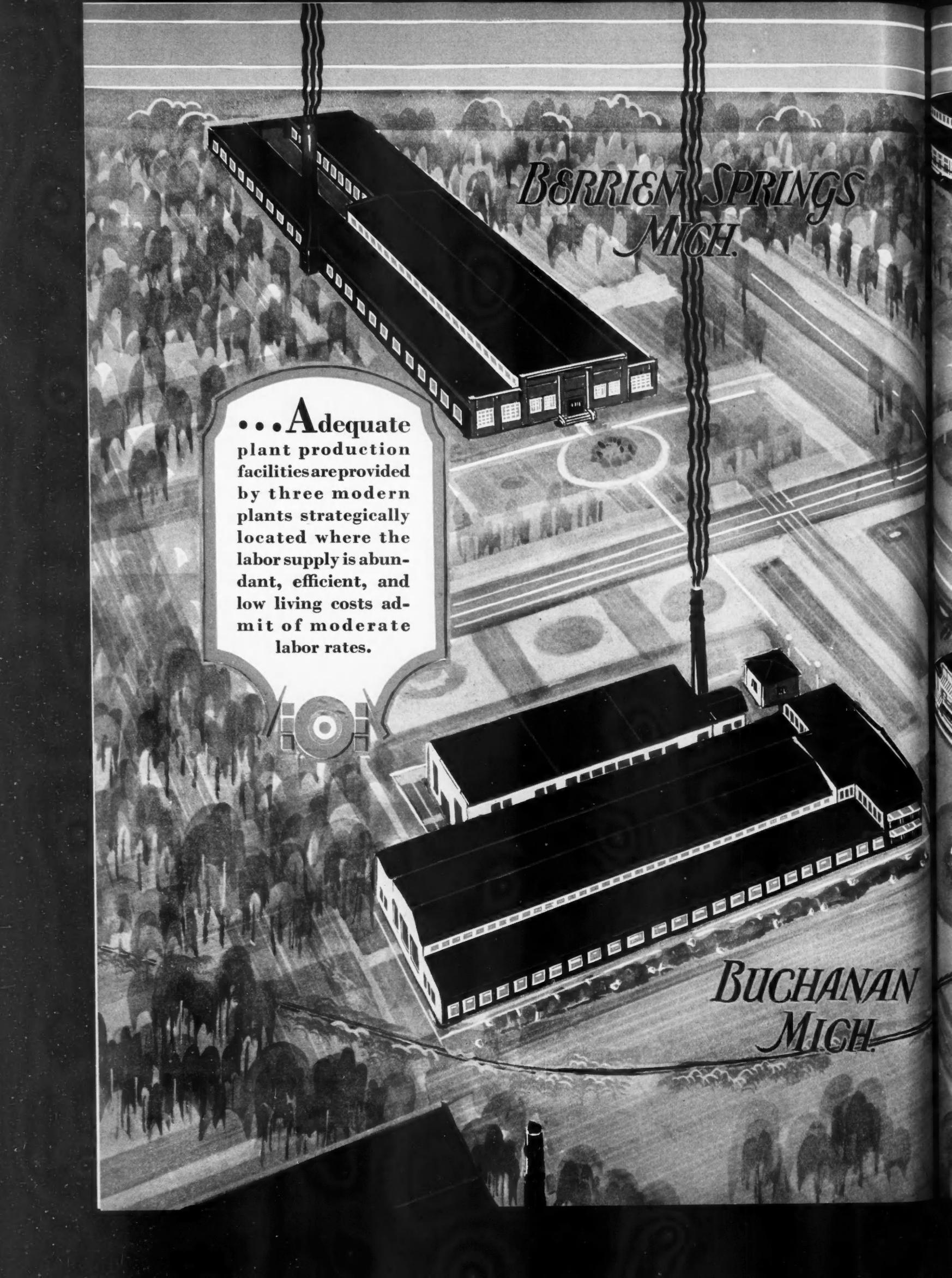
VIEW AT PLANT OF
CLARK EQUIPMENT COMPANY
BUCHANAN MICHIGAN





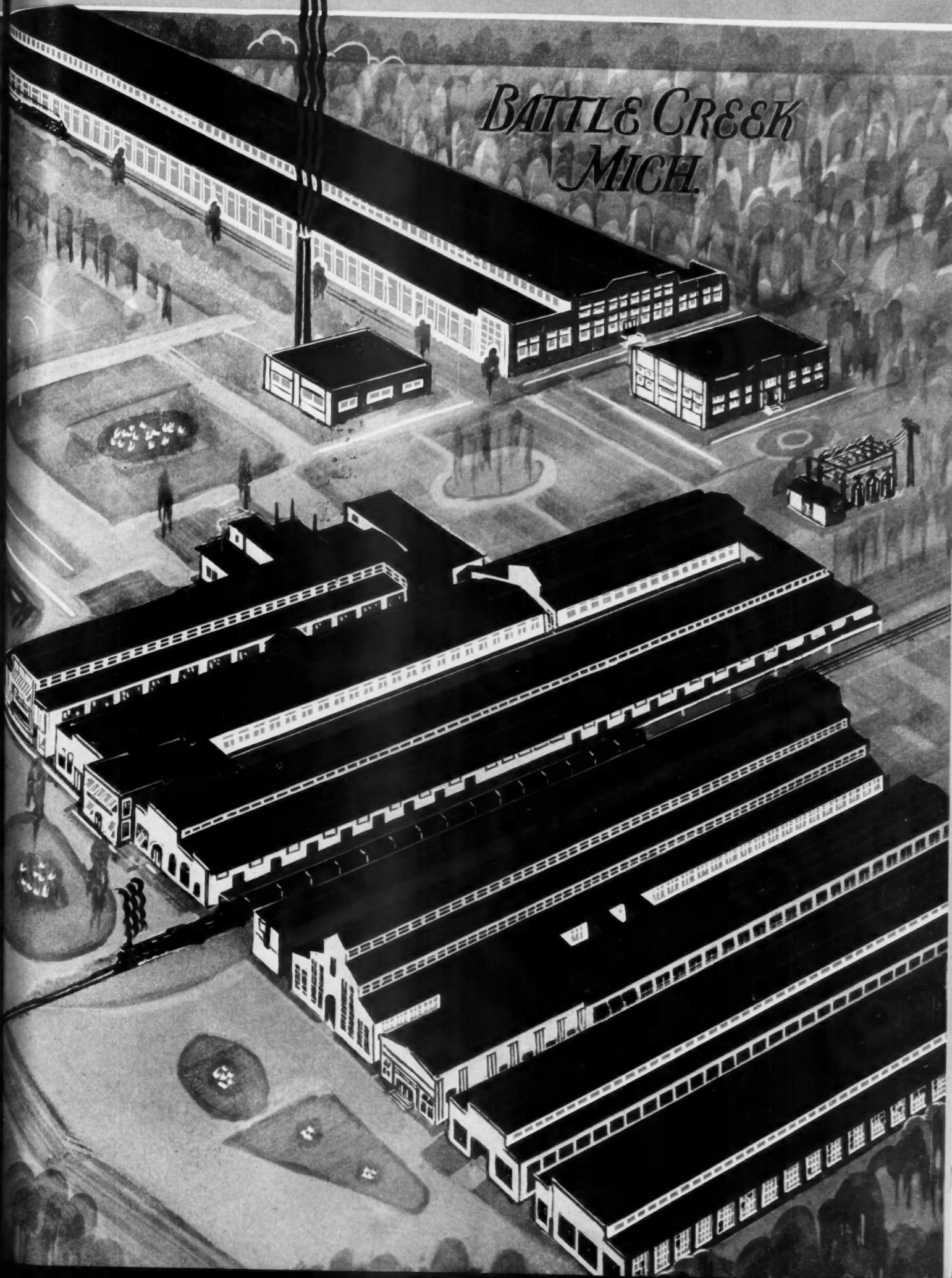
BERRIEN SPRINGS
MICH.

• • • Adequate plant production facilities are provided by three modern plants strategically located where the labor supply is abundant, efficient, and low living costs admit of moderate labor rates.



BUCHANAN
MICH.

BATTLE CREEK
MICH.



INTRODUCING

• • • **Introducing Clark
Transmissions for com-
mercial and passenger cars.**

**A complete new plant at
Berrien Springs, Michigan,
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duction machinery.**

**Transmissions now in
production embody latest
designs in multiple speeds.**

CLARK TRANSMISSION COMPANY
Berrien Springs, Mich.



Commercial Car Specifications—Corrected Monthly

- Changes
- New Models

卷之三

For Motor Bus Chassis See Pages 76 and 77

Key of abbreviations page 78
M=Motor Bus Chassis See Pages 6 and 7
W=Wheel Axles one end
W/W=Wheel Axles one end in back, one end in front
L=Load carrying capacity in kg.
H=Height in mm. from ground to top of chassis
C=Chassis width in mm.

*The Commercial Car Journal
and Operation & Maintenance*

February, 1929

Trade Name and Model	General		Engines		Fuel System		Type and Make		Gear Rates		Rear Axle		Front Axle Make and Model		Standard Wheelbase			
	Front (inches)	Rear (inches)	Front	Revs.	Starter	Generator and Starter	Clutch	Gears	Transmission	Brakes, Location	Low	High Reduction	High Reduction	Low	Steering Gear (Make)	Cab to rear of frame	Cab to rear axle	Chassis Weight (lbs.)
1 Ton—Cont'd																		
Stewart Buddy	946 128	138	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	19 8	19 8	5 6	13 7	G Own	89 1/2	50%	2773
Stewart GD-N	1075 140	138	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	27 3	27 3	5 6	14 6	G* Own	86 1/2	50%	2660
United 16	122 1/2	122 1/2	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	D-R	D-R	D-R	Stir	19 6	19 6	5 6	17 63	B* Shu 5400	96	57	2490
United 16C	122 1/2	122 1/2	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	D-R	D-R	D-R	Stir	18 2	18 2	5 6	17 63	B* Shu 5400	96	55	2500
U. S. A. 152	1650 138	162	S 34x5	S 34x5	S 34x5	S 34x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	20 0	A* Shu 350	108	70	3400
Wachbett S.	1650 152	152	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	20 0	A* Shu 350	120	84	3300
White 15B	1650 133 1/2	150	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	19 6	A* Own 15	120	84	3242
+White 60	1650 138	157	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	23 4	23 4	5 6	17 51	F* Own 15	112	51	3738
Willys Knight T-100	1650 130	130	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	20 7	20 7	5 6	20 4	E* Own	91	51	2700
1 1/2 Ton																		
Attisbury 26B	132	132	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	7 2	7 2	5 6	18 7	A* Shu	98 1/2	55	3550
Biederman B24	154	154	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	14 64	G* Own	104	56	3600
Brockway Junior	130	130	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	20 84	G* Col 3204	96	56	3450
Brockway JF	137	137	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 3	25 3	5 6	20 84	G* Col 3205	96	56	3450
Clinton 20B	150	150	Opt.	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	20 4	E Tim 1250	108	70	3400
Clydesdale 10A	154	154	P 34x5	P 34x5	P 34x5	P 34x5	D-R	D-R	D-R	Stir	28 9	28 9	5 6	18 6	A* Tim 1250	120	84	3300
Commerce 25Z	136	136	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	22 5	22 5	5 6	17 51	F* Tim 1250	112	51	3300
Corbit 620	137	150	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 3	25 3	5 6	18 7	A Tim 11708 H	108	64	3300
Dodge Brothers BE	945 130	130	P 33x5	P 33x5	P 33x5	P 33x5	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 76	G* Own	86 1/2	55	3550
Dodge Brothers BEV	1630 130	130	P 33x5	P 33x5	P 33x5	P 33x5	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 40	G* Own	85 3	49%	2950
Dodge Brothers JEF	1110 140	140	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 40	G* Own	85 3	49%	2950
Dodge Brothers BEF	1640 130	130	P 33x6	P 33x6	P 33x6	P 33x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 40	G* Own	85 3	49%	2950
Dodge Brothers BEG	1665 140	140	P 33x6	P 33x6	P 33x6	P 33x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 40	G* Own	85 3	49%	2950
Dodge Brothers IEW	1100 140	140	P 33x6	P 33x6	P 33x6	P 33x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 40	E* Col 3205	108	64	3550
Gardoff 25Z	131	160	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	22 5	22 5	5 6	15 57	A* Col 3206 H	108	64	3550
Goffredson B24	1685 133	174	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 3	25 3	5 6	16 66	A* Col 3206 H	97	57	3550
Grauman 283 N	129	146	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	22 5	22 5	5 6	23 4	B* Sal D	97	57	3550
Gramm Brothers 10	120	120	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	24 48	A* Sal D	97	57	3550
Indiana 11X	120	120	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal D	98	54	3550
Indiana 11	120	120	P 32x5	P 32x5	P 32x5	P 32x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal D	98	54	3550
Int. Harvester S-24	129	129	129 1/2	129 1/2	129 1/2	129 1/2	D-R	D-R	D-R	Stir	22 5	22 5	5 6	21 3	H* East 450F	94	51 1/2	3250
Int. Harvester S-26	130	130	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	P 32x4 1/2	D-R	D-R	D-R	Stir	27 3	27 3	5 6	16 66	A* Tim 11708 H	108	64	3550
Macfar 36	140	154	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 3	25 3	5 6	22 0	A* Tim 540F	97	57	3550
Master 11	132	134	P 32x5	P 32x5	P 32x5	P 32x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	23 48	A* Sal A	97	57	3550
Moreland 1	129	134	P 32x5	P 32x5	P 32x5	P 32x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
Republie 75-6	128	128	P 32x5	P 32x5	P 32x5	P 32x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
Republie 75	128	128	P 32x5	P 32x5	P 32x5	P 32x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
Sanford S.	120	130	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	22 5	22 5	5 6	17 5	A* Sal A	97	57	3550
Selden Pacemaker 25	136	136	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 4	E* Col 3205	108	64	3550
Sterling DB7	129	140	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	27 3	27 3	5 6	22 0	G* Col 3008	97	57	3550
Stewart 10X	125	130	160	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G Col 3008	97	57	3550
United 20C6	128	128	128	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	23 48	A* Sal A	97	57	3550
Valley 57	125	132	142	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
Woods 20B4	125	129	129	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
Woods 20B6	120	120	120	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	24 48	A* Sal A	97	57	3550
1 1/2 Ton																		
Ame 24	136	156	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	28 9	28 9	5 6	23 4	A* Col 5400	108	62 1/2	3450
Aorn 30-P	2300 144	167	P 30x5	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	27 3	27 3	5 6	20 85	A Sal A	97	57	3450
Arnieler 30	125	140	148	P 34x4 1/2	P 34x4 1/2	P 34x4 1/2	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Arnieler 30B	125	150	188	S 34x4 1/2	S 34x4 1/2	S 34x4 1/2	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Arnieler 30A	125	145	192	S 34x4 1/2	S 34x4 1/2	S 34x4 1/2	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Arnieler 26A	125	145	145	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G Col 350	97	57	3450
Arnieler 26B	125	145	145	P 30x5	P 30x5	P 30x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G Col 350	97	57	3450
Atterbury 26C6	122	132	166	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G Col 350	97	57	3450
Biederman A	125	130	170	S 34x5	S 34x5	S 34x5	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Biederman CJB	122	142	142	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Brockway E	147	161	147	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0	G* Col 350	97	57	3450
Brockway CJB	149	149	P 32x6	P 32x6	P 32x6	P 32x6	D-R	D-R	D-R	Stir	25 6	25 6	5 6	22 0				

Key of abbreviations- page 28

Key of abbreviations. Page 78

Biederman, Chicago 35C.....	180°	220	S 36x12	Con 6B	33 7L	PC	Han	Own	Opt	52 0	A*	Shu	Tim 66702DH	U	B-L 51	D-R	G	Spj	Tim 66702DH	W F	520	7000
Clinton 85-6	190°	Opt	S 36x5	Wau CU	30 6L	FP	Wau	Chi	Opt	50 1	B	Tim 16302	W F	7 75	73 6	B*	Tim 16302	W F	10 3	5975		
Clydesdale 4X.....	170°	184	S 36x5	Bud BUS	38 4L	FP	Own	Chi	Opt	50 1	A*	Tim 16302	W F	7 75	98 16	A*	Tim 16302	W F	10 3	5975		
Clydesdale 4X.....	170°	130	P 40x8	Con B6	36 0L	FP	Bud	Non	Opt	50 1	A*	Tim 16300	W F	7 75	98 16	A*	Tim 16300	W F	10 3	7500		
Clydesdale 4X.....	170°	175	S 36x6	Con L4	36 0L	FP	Bud	Non	Opt	50 1	A*	Tim 16300	W F	7 75	98 16	A*	Tim 16300	W F	10 3	7500		
Clydesdale 4X.....	170°	184	S 36x6	Bud BA6	40 8L	FP	Bud	R-T	Opt	50 1	A*	Tim 16300	W F	7 75	98 16	A*	Tim 16300	W F	10 3	7500		
Commerce 70Z.....	170°	130	S 36x10	Bud BA6	40 8L	FP	Bud	R-T	Opt	50 1	A*	Tim 16302	W F	10 3	98 2	A	Tim 16302	W F	10 3	8200		
Diamond T700.....	171 1/2°	4500	160	S 36x6	Bud YXC	45 9L	PC	Non	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	8300		
Goffredson W6A.....	170°	184	S 36x10	Her G	44 8L	PC	Han	G&O	Opt	50 1	A*	Tim 16300	W F	7 75	45 0	A*	Tim 16300	W F	10 3	6600		
Duplex EF.....	170°	130	S 36x6	Con 20R	44 8L	PC	Pie	G&O	Opt	50 1	A*	Tim 16300	W F	7 75	45 0	A*	Tim 16300	W F	10 3	6600		
Federal 3C6.....	191	230	P 36x8	Con 20R	44 8L	PC	Pie	Non	Opt	50 1	A*	Tim 16300	W F	7 75	45 0	A*	Tim 16300	W F	10 3	6600		
Federal UL7.....	163	199	S 36x10	Con L4	44 8L	PC	Pie	Non	Opt	50 1	A*	Tim 16300	W F	7 75	45 0	A*	Tim 16300	W F	10 3	6600		
F.W.D. U-6.....	1575	448	S 36x6	Wau CU	6-4-3 4x5 1/2	38 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Goffredson 70Z.....	170°	175	P 40x8	Bud BA6	6-4-3 4x5 1/2	40 8L	PC	Non	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Hug 90.....	160	180	S 36x6	Bud BA6	6-4-3 4x5 1/2	40 8L	PC	Non	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Goffredson W6A.....	170°	172	Opt	P 38x7	Bud DW-6	6-4-3 4x5 1/2	32 4L	PC	Per	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
G-P 82-6.....	172	172	Opt	P 38x7	Wau DR	6-4-3 4x5 1/2	32 4L	PC	Per	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Graum Bernauer 30.....	158	188	S 36x6	Con 20R	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Hahn 76.....	196	218	P 34x7	Bud DW-6	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Harvey WHC.....	1250	155	S 36x6	Bud YBU-1	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Int. Harvester HS4.....	160°	160	S 36x6	Bud YBU-1	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
King Zeitzer 75.....	156°	127	S 36x6	Bud YBU-1	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Kleiber.....	4800	170	S 36x6	Wau DR	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Larabee Devco 70.....	168°	200	S 36x6	Con 20R	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Le Moon H40.....	4350	184	S 36x6	Con 20R	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Luedinghaus.....	4950	168°	S 36x6	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Mack AC.....	4850	174°	S 36x5	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Service 70.....	175	175	Opt	P 34x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
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Standard 3 1/2-5 K.....	160°	172	S 36x7	Wau DU	6-4-3 4x5 1/2	32 4L	PC	Per	Opt	50 1	A*	Tim 16302	W F	7 75	45 0	A*	Tim 16302	W F	10 3	6600		
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Gasoline Tractor-Trucks

February 1929

Motor Bus Chassis Specifications

Key of abbreviations, page 78

Electric Commercial Cars

Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight—Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Spring	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
O. B-B.	13	G-E	Own	C	D	S 36x4	DS36x3½	Own	107
O. B-C.	11	G-E	Own	C	D	S 36x5	DS36x4	Own	135
O. B-D.	10	G-E	Own	C	D	S 36x6	DS36x5	Own	143
Walker 10	2400	1500	1750	14	H&S	60	G-E	Own	4	S	Cla	Mat	S 32x3½	S 32x4	Ros	108°	66		
Walker 20	3200	1500	2000	2450	15	A	50	Wes	Own	5	Owa	Own	Mat	S 34x3½	S 36x4	Ros	94°	66	
Walker 25	3500	2000	3000	2550	14	A	50	Wes	Own	5	Own	Own	Mat	S 34x4	S 36x5	Ros	101°	66	
Walker 45	4400	4000	5000	3300	14	A	50	Wes	Own	5	Own	Own	Mat	S 36x4	S 36x6	Ros	114°	66	
Walker 50	4800	5000	6000	3450	13	A	50	Wes	Own	5	Own	Own	Mat	S 36x5	S 36x8	Ros	126°	66	
Walker 65	7000	7000	9000	4350	11	A	50	G-E	Own	5	Own	Own	Mat	S 36x5	DS40x5	Ros	131°	66	
Walker 75	7800	10000	14000	4500	10	A	50	G-E	Own	5	Own	Own	Mat	S 36x6	DS40x6	Ros	141°	66	
Ward B	6500	2300	.....	.....	14	S	.....	*	Own	4	W	Own	Eat	P 30x5	P 30x5	Ros	91	.....
Ward C	8400	2850	.....	.....	13	S	.....	*	Own	4	W	Own	Eat	P 30x5	P 32x6	Ros	96	.....
Ward E	13000	4100	.....	.....	12½	A	.....	*	Own	4	W	Wis	Eat	S 34x5	S 36x7	Ros	114	.....
Ward G	17000	4950	.....	.....	11	A	.....	*	Own	5	W	Wis	Eat	S 36x8	S 36x8	Ros	128	.....
Ward K	25000	7750	.....	.....	10	A	.....	*	Own	5	W	Wis	Eat	S 36x6	S 36x10	Ros	160	.....
Ward KS	30000	8075	.....	.....	9½	A	.....	*	Own	5	W	Wis	Eat	S 36x7	DS36x7	Ros	160	.....

NOTE: Battery Equipment on all above makes is at the option of the purchaser. Battery Location Abbreviations: A—amidships; H—under hood; and S—under seat. *G-E or Wes

KEY OF ABBREVIATIONS

For addresses of manufacturers listed below see Chilton Catalog and Directory

Wheelbase	Radiator	Front and Rear Axles
*More than one wheelbase furnished.	Bow—Bowerbank, E. R. Co.	*Two speed.
Tires	Bus—Bush Mfg. Co.	½—Semi-Floating.
B—Balloon.	Chi—Chicago Mfg. Co.	¾—Three-Quarter Floating.
P—Pneumatics standard equipment.	Fed—Fedders Mfg. Co.	B—Straight Bevel.
DP—Dual pneumatics standard equipment.	G&O—G. & O. Mfg. Co.	Cla—Clark Equip. Co.
S—Solids.	Har—Harrison Rad. Corp.	Col—Columbia Axle Co.
DS—Dual solids.	Lon—Long Mfg. Co.	Con—Continental Axle Co.
*—Tires at extra cost.	McC—McCord Rad. & Mfg. Co.	C—Chain.
†—Pneumatics can be furnished at extra cost.	McK—McKinnon Dash Co.	D—Dead.
Engine	Mod—Modine Mfg. Co.	Eat—Eaton Axle Co.
Bud—Buda Co.	Per—Perfex Corp.	F—Floating.
Con—Continental M. Corp.	R-T—Rome-Turney Rad. Co.	I—Internal Gear.
D—Head and Side.	U. S.—U. S. Cartridge Co.	R—Double Reduction.
FP—Full Pressure to all bearings including wrist pins.	You—Young Rad. Co.	S—Spiral Bevel.
H—Overhead.		Sal—Salisbury Axle Co.
HaS—American Car & Fdy. Co.		She—Sheldon Axle & Spring Co.
Her—Hercules Motor Corp.		Shu—Shuler Axle Co., Inc.
I—In Head.		Tim—Timken Det. Axle Co.
Jackson—Master M. T. Mfg. Co.		Tor—Eaton Axle & Spring Co.
L—L—Head.		W—Worm.
Lyc—Lycoming M. Corp.		Wis—Wisconsin Parts Co.
PC—Pressure to all crankshaft and connecting-rod bearings.		Brake
PG—Pump, Gravity & Splash.		A—Rear Wheels only.
PS—Pressure with splash.		B—Driveshaft and Rear Wheels.
SP—Circulating splash.		D—Jackshaft and Rear Wheels.
T—T—Head.		E—Wheel Brakes.
Wau—Waukesha M. Co.		F—4-Wheel brakes with emergency on jackshaft.
Wis—Wisconsin M. Mfg. Co.		G—4-wheel brakes with emergency on driveshaft.
Yell—Yellow Sleeve V. E. Wks.		H—4-wheel brakes with emergency on rear wheels.
X—Sleeve.		Service Brake Type
Governor		*—Mechanical.
Dup—Eisemann Magneto Corp.		†—Hydraulic.
Handy Gov. Co.		‡—Vacuum Booster.
K. P.—K. P. Products Co.		°—Compressed Air.
McC—E. R. Klemm.		Steering Gear
Mon—Monarch Gov. Co.		CAS—Columbus G. & P. Co.
Non—Not Supplied.		D-G—Detroit Gear & Mach. Co.
Pha—Bethlehem Fabricators, Inc.		Dod—Dodge Bros. Co.
Pie—Pierce Governor Co.		Gem—Gemmer Mfg. Co.
Sim—Eisemann Magneto Corp.		Han—Hannum Mfg. Co.
Wau—Waukesha M. Co.		Jac—Saginaw Steering Gear, Div. General Motors Corp.
		Lav—Hannum Mfg. Co.
		Ros—Ross Gear & Tool Co.

